

J. D. Paul
1880

REPORT OF DIVISION NO. 1
OHIO CANAL FROM HEBBARD
THE WALHONDING CANAL
ERN RESERVE AND MAUMEE

WESTERN RESERVE AND MAUMEE

This extends from Bellevue to Perrysburg, a distance of 32 miles. It was first constructed from Fremont to Perrysburg, 32 miles, of 30 feet width was graded, 20 feet of it covered with broken stone. 1st, a layer of 7 inches, then a 2d one of 5 inches, broken stone would pass through a two inch ring; nearly all the distance of the roadway was from 4 to 5 feet above the ditches, to insure good drainage.

From Fremont to Bellevue, the roadway was graded and on an average 3 or 3 feet above the side ditches, covered with gravel instead of stone.

A side road was also constructed nearly the whole distance, with bridges to drive off from the McAdamized roadway to the side ditches, which could be used a large portion of the year, thereby effecting a great saving to the metal of the main road. It was all leased in 1861, but in June 1871, the State again took charge of it, and as the proper management of the road was investigated before the Attorney General in 1871, I did not take any testimony. I drove over the road March 19th, 20th, and 21st, having waited for the frost to come out of the ground as long as possible, and have time for a report by the 1st of April; it was rigidly frozen, therefore firm to drive upon. From Bellevue to Fremont, the road is badly rutted, and as soon as the frost is out of the ground, heavy loads will cut through the gravel in many places. The State has expended considerable money upon this portion the past nine months, in putting on gravel and broken stone, 50 cords limestone having been put on near the Fremont bridge. But little attention has been paid to encroachments, on the proper width of the road, fences being on portions of it. Many places of the graveled road are still convex, as it all should be, yet far

soon as it rains, will be badly cut up on
e to the surface of the roadway.

the road is covered with the white lime-
e road in many places. As before stated,
thick, but the subsequent travel without
off, has reduced the thickness to 4 and 5
the roadway instead of being convex, as orig-
ly flat and in some places concave; when it
pon it, causing the metal to wear much faster
ak through. It is badly rutted in places and will
rs. The character of the soil through the country
y clay and swampy. Its maintenance is a necessity,
ized roads are being constructed to it.

June 1st, 1871, to March 1st, 1872, (9 months,) were
e of gate keepers' salaries. From this deduct \$750 for
, leaving \$3,088.13, and for the year would amount to
ould be used for repairs, and when the road is put in good
s would probably keep it so. The present travel not being
of lighter loads, I do not think it would require new metal
an 10 feet of the roadway, thereby saving a great expense.
last year constructed 14 new side bridges, so that the side road
used. On the road are 7 gate keepers' houses, all of which need
fs and general repairs to the floors, and plastering. The small
ed bridges need new roofs, and the smaller ones of 25 to 30 feet
o, new plank and stringers.

The bridge at Fremont, 355 feet long, of 3 spans, has been built over
30 years, the lower timbers are decayed at the joints, the end spans have
deflected or sagged over 10 inches, and the central one over 15 inches.
With ordinary loads it is very unsteady. I consider the bridge in its
present condition very unsafe, and would suggest that measures be taken
to thoroughly strengthen it at once, or replace it with a substantial iron
superstructure.

I would recommend that the tolls, at least, be expended upon the road
to put it in repair. Much of it has a good foundation, and although the
metal is shallow, it will not break through. The worst places can be re-
paired, and by judicious management, in a few years put in good order
with but little expense to the State, except for bridges. The side road
should be put in good repair, and also supplied with the necessary side
bridges; the houses should be repaired, and the fences moved off from
the road, and the side ditches opened in many places.

A GENERAL DESCRIPTION OF THE STRUCTURE OF THE OHIO CANAL, FROM CLEVELAND TO HEBRON.

Owing to the unusual severity of the winter, most of them were covered with ice, and remaining so until nearly the present time; but one or two courses of the masonry, and the wing walls of the locks, the upper pieces of the cribbing, and balance beams could be seen.

In only three or four locks were the upper gates closed, and the masonry of the chambers visible to the level below, and in none was the flooring exposed to view.

Lock No. 44 is at the junction of the canal with the Cuyahoga river at Cleveland. The west side of the lock chamber is pressing in, but being a large lock, does not discommode canal boats in passing through. Gates are good.

Lock No. 43 is also a large lock, and in good repair. One set of gates needs new balance beams.

Lock No. 42 was dispensed with many years since, and the banks raised from its location down to Lock 43.

From Lock No. 43 the canal runs near to and is above the Cuyahoga river, 18 to 20 feet, according to the stage of water in the latter. The dredging of the river so deep of late years, the quicksand formations underlying the canal and its banks, causing the tow path to constantly settle towards the river, required the Lessees to drive a large number of piles to protect the canal. Two extensive breaks have occurred here.

The Weigh Lock is said to be in good condition.

Lock No. 41. Wing walls crowding in, will be repaired the coming spring. Gates said to be in fair condition, only a 5 feet lift.

I would here state, that the canal follows the valley of the Cuyahoga river, nearly to lock No. 21, about 35 miles. Opposite the ten (10) mile post, the tow path has been protected from the washing of the river by piling.

Locks Nos. 40 and 39. Wing walls crowding in, stone crumbled, balance beams on No. 39 quite old.

Tinker's Creek Aqueduct was rebuilt three or four years since, and is in good condition; also the stone work as far as could be seen.

Lock No. 38. Wing walls need some repairs.

Lock No. 37 in fair condition.

Lock No. 36. Gates are quite old, wing walls crowding in, and have been picked off. The Pinery Feeder comes in near here. The dam and feeder are said to be in good condition. This furnishes all the extra water needed

between this point and Cleveland, (distance 17 miles,) and has always been ample. The pinery level between Locks Nos. 36 and 35, owing to the high side hills above the canal, has been often times filled with slides from the banks; was in poor condition when leased.

Lock No. 35. Wing walls crowding in.

Lock No. 34. Gates leaky and poor, wing walls crowding in.

Lock No. 33. Wing walls badly pressed in, and crumbled out; cribbing mostly gone.

Lock No. 32, near Boston. Wing walls in poor condition; gates also.

Lock No. 31. Wing walls pressed in and falling down.

Lock No. 30. Somewhat pressed in; has been picked off so boats can go through.

The feeder and dam appear to be in good order, the latter having been replanked of late.

Lock No. 29. Pressed in; some stone have been picked off to allow boats to pass through. The upper end of this lock forms part of the abutment to the Peninsula aqueduct; a portion of the stone work, as well as the aqueduct, will have to be rebuilt the coming spring. The testimony shows that arrangements have been made for the timber and stone to repair this structure at once.

Lock No. 28, called also Peninsula deep lock, has been partially rebuilt. Said to be in good order.

Lock No. 27. Wing walls crowding in, needs some repairs. Iron aqueduct over Furnace run needs some slight general repairs. Below mile post 28, the river has nearly washed the tow path away; protected with stone and brush.

Lock No. 26. Looks well.

Lock. No. 25. Stone work poor, gates leak badly, and like the cribbing, decayed.

Lock No. 24. Stone work needs thorough grouting. Yellow creek, once used as a feeder at this place, but abandoned now, would require but little to reconstruct it.

Lock No. 23. Wing walls need repairing.

Lock No. 22. Stone badly crumbled. Fender post down. Gates need some repairs. Upper courses of the chamber walls have been relaid.

Lock No. 21. Walls appear to be good; gates need some repairs. Feeder from the Little Cuyahoga comes into the canal at this point.

Lock. No. 20. Sides pressed in; wing walls need repairs; lower gates need renewal, upper ones good. In less than two miles there are nineteen locks to the Summit, and the same general remarks will apply to nearly all of them. The constant use, caused by the immense business done upon this end of the canal, wears very rapidly upon the structures of these

locks. They were first built too light, and many of them of an inferior quality of stone, and as a consequence of usage and destructive action of the elements, the stone work is rapidly disintegrating and scaling off. Many of the chambers and wing walls are pressing in. A number of the gates require renewal; others only such general repairs as are always found necessary each spring. The stone work will require pointing and thorough grouting. It is impossible to say how long the wing walls may stand in many of the locks, and while the masonry does not look as well as some in the southern part of the State, yet I think all north of Akron are of the first construction, while those in the south have been renewed in many places. The disintegration of the stone and the pressing in of the wing walls are not owing to the negligence of those in charge of them now, but to causes above mentioned.

The water from the Little Cuyahoga river, which passes through the Akron mills, also the lockage from the Ohio canal to the Pennsylvania and Ohio canal, flows into the Ohio canal at the foot of Lock No. 16. The former did not join with the latter on the Summit as was first chartered, but was changed, requiring two lockages up to reach it, and the water was returned to the Ohio canal as above mentioned. Boats going from the Pennsylvania and Ohio canal to Cleveland, go up one lock, then pass into the Ohio canal, one level below the Summit.

THE SUMMIT LEVEL.

This level is nine miles long, passing through what is called Summit Lake. On either side of the lake the ground is low and mucky, for some distance, but few seasons would admit of the water being drawn off to clean out the bottom of this level. It was cleaned in 1838, also in 1856, and oftentimes boats would stick on it; but little could be done to remedy the trouble. In the past year this level has been dredged by the Lessees, with their steam dredge, and it is now better than when the State had the canals. In regard to the cribbing of the locks north of Akron, at quite a number the upper pieces are decayed; at others, none visible; the pieces under water, I presume, are sound. The feeders and reservoirs for the Summit will be spoken of more fully hereafter.

Lock No. 1, south of the Summit, called Wolf Creek Lock, the cribbing is poor; feeder posts gone, stone work crumbled some; new gate. Wolf creek flows into the canal as a feeder at a little distance below this lock. Waste weir needs some repairs.

Two locks at Clinton need some general repairs. The Tuscarawas is taken into the canal at this point. Waste weirs and gate need repairing. Lock at Fulton in fair condition. The feeder from the Masilla is broken (needs repairs; breaks nearly every spring.

Locks Nos. 5 and 6, at Massillon, appear to be in good condition; stone work good.

Lock No. 7, Bethlehem Lock, has been repaired; needs new balance beams; stone work fair, cribbing good; lower end of the lock has been rebuilt, also the tumble.

BOLIVAR AQUEDUCT.

The wooden trunk will require renewal in a year or two; it is to receive thorough repairs this spring; one portion of the south-east abutment will also require rebuilding. The piers and other abutment have disintegrated badly, but will last some years, I think. It consists of three spans of fifty-five feet each.

Lock No. 8, or first below Bolivar, the stone work leaks badly, needing thorough grouting. Gates leak; tumble very good; cribbing needs repairing.

Lock No. 9. Stone work badly crumbled; cribbing decayed; tumble needs general repairs.

Lock No. 10. What could be seen of the stone work is in very fair condition; tumble needs repairing.

Lock No. 11. Gates leak badly; cribbing gone.

Lock No. 12. (Stone quarry lock.) The masonry has been picked off and the chamber planked; cribbing fair.

Lock No. 13. (Near Canal Dover.) The chamber of this lock has been planked, and is in good condition.

Lock No. 14. (Lockport lock.) It has been partially planked; stone work scaled off; lower end of it needs rebuilding, also new lower gates; the upper ones tight, 13 feet lift; cribbing decayed some; tumble needs repairing.

Lock No. 15. (New Castle.) Chamber of the lock good; gates good, stone in wing walls crumbled; some cribbing gone.

Lock No. 16. (Trenton.) Has been partly planked; needs thorough grouting; stone work badly crumbled; tumble needs repairing; cribbing good.

Lock No. 17 has been planked; gates old. Trenton feeder comes in at foot of this lock. I did not have time to visit the Trenton dams, but they are said by Superintendent West to be in good order. Boats go up this feeder three miles, thence into the Stillwater as far as Uricksville.

Lock No. 18. Cribbing partly gone; wing walls need repairing; gates good.

Lock No. 19. Stone work at lower recess will have to be relaid or planked even.

Lock No. 20. In good order; cribbing needs some repairs.

Locks No. 21 and 22 had general spring repairs.



Lock No. 23. I find this called Lock No. 22, though I was informed by Superintendent West that it should be No. 23. This also needs general spring repairs.

Lock No. 24. Stone work crumbled; needs thorough grouting.

Lock No. 25. In good order: also Turkey lock.

THE ROSCOE AQUEDUCT.

The trunk of this structure was built but a short time since by the Lessees, and is a very substantial structure; the towing bridge is to be rebuilt this spring. The aqueduct consists of five spans of fifty-five feet each. The north-west corner of the east abutment needs repairing; some portions of the stone work have disintegrated by the action of the elements. The locks at Roscoe and Adam's Mills, are said to be in good repair.

Lock No. 1, above Dresden, appears to be in good order.

Lock No. 2. Masonry looks well, yet it leaks badly.

Locks Nos. 3 and 4 need general spring repairs.

Lock at Licking dam needs new gates; stone work good. The dam is built of timber, was washed away in 1866, rebuilt by Lessees; now considered safe. Foundation under masonry on west side settled, breaking the stone work some. Owing to the peculiar formation under this dam, it leaks considerably; much attention has been paid by the Lessees to make it tight but not successful; it only gives them inconvenience during low water.

The locks from the dam to Hebron are in fair condition; some of the wing walls are pressing in, but do not interfere with navigation at present. The Granville feeder and dam are in good condition. But little attention is paid to the proper slope of the towing path on this division, north of Bolivar; it is nearly all the way from eight to ten feet wide, but at many points south, where the business is light, it has but a single track; water falling upon two-thirds of the entire tow path, will wash into, instead of away from the canal.

SANDY FEEDER.

This comes into the Ohio canal at Bolivar, and was once a part of the Sandy and Beaver canal. The aqueduct is supported upon wooden bents, and is said to be in good condition and safe; it was so covered with ice on March 28th, that it could not be examined. The dam appears to be in good condition.

The first lock at Sandyville, above the dam, was rebuilt in 1870, under the direction of the engineer in charge of Division No. 1 of the Public Works. It was originally a rubble stone lock, the chambers planked, and

was so reconstructed. The lock leaks so much that with the limited amount of feed they have for this level they have not been able to fill it; even if they could, it would not be passable for boats to the streets until the level was thoroughly cleaned out, which I understand was to be done by the citizens of Sandyville. The canal has been filled up in the streets, leaving only culverts of two to three feet for the water to pass through to fill the level. The lower part of the lock was full of ice; gates and paddles all frozen. We could not determine where it leaked.

WALHONDING CANAL.

Time did not permit me to examine only the flight of locks at Roscoe, the masonry of which is in good condition; gates need some slight repairs. The Superintendent and Collector on this canal testified that it was in good condition. The business upon it is very light, hardly averaging a boat per week last year.

Dresden side cut connects the Ohio canal with the Muskingum river improvement; the length is two and a half miles, it has one small aqueduct and three locks; all need general repairs.

The only way I had of finding out what was the condition of the canals, at the time of the lease, was by testimony. Notices were given that testimony would be taken in Cleveland, February 16th and 17th, Peninsula 19th and 20th, Akron 21st and 22d, Massillon 23d and 24th, Navarre 26th and Canal Dover 27th, and at other places as the time could be determined as I proceeded.

I regret to be obliged to say that I was reliably informed that some of the employes of the Lessees preceded me, and told boatmen that this was an effort on the part of the State to take away the canals from the Lessees, and sell them to some railroad, and in many instances, boatmen would not come forward and testify. Many who were loud in their condemnation of the management of the canals last fall, testified that they were in good condition now. At Cleveland, Col. Manypenny, General Agent for the Lessees, the late Col. Nugen, General Superintendent for them, of the Ohio canal, from Roscoe to Cleveland, and Gen. Voris, Attorney for Lessees, appeared and gave the following notice, to-wit:

"The Lessees of the Public Works, in appearing before the said Commissioner, waive no right or rights, they may have or ought to have, under said lease, by reason of their said appearance herein, but appear for the express purpose and that purpose only, of aiding the said Commissioner to ascertain the facts, authorized to be inquired into by the resolution, constituting said Board of Commissioners, and to protect their interests

so far as such examination may affect them, and for no other purpose whatsoever."

As the testimony was all reduced to writing, and is appended to, and forms a part of this report, I shall only speak of the principal facts as developed by it.

Some four or five years prior to the lease, the business on the canals decreased, and the State allowed them to run down, and in the spring of 1861, (the year of the lease) the water was not drawn off for repairs.

When the State had charge, the only way to bottom them out, was to draw the water each spring, and to do it with men and wheelbarrows, at the same time repaired the locks, and used hand dredges to clean out bars during navigation. The past three or four years, the Lessees have used two steam dredges on the Ohio canal, which can be worked nearly all the year, and are very effectual.

From Akron to Cleveland, the dredge has done but little, except to make passing places in some of the levels.

Many witnesses testified that the Lessees had increased the tonnage of boats from ten and fifteen to twenty tons. Boats were first built with a keel, and very sharp fore and aft, with a view to speed; but many years since, the model was changed and the size increased, consequently their tonnage.

In the Report of the Board of Public Works, for the year 1850, they say: "That the tonnage on the Ohio canal is from sixty to eighty tons," and we find from the records, that many boats in 1854, were carrying seventy-five tons. J. Blickensderfer, Jr., in a report of the examination of the Pennsylvania and Ohio canal, in 1857, says: "That cargoes of seventy-five tons and upwards, pass from that to the Ohio, and that the heaviest cargoes on the Ohio, are from this canal."

By the lease, the Lessees are only required "to furnish prompt, speedy and successful navigation for all boats not drawing over three feet of water," requiring as the testimony shows, three to four inches more water, to float the boats easily. The tonnage of boats drawing three feet would be from sixty to sixty-five tons, depending somewhat upon whether the boat was water soaked or not. As will be seen from a list of boats gauged, weighed, and found in the testimony, carrying from seventy to seventy-five tons, that they drew from three feet four to six inches of water in 1871, and as some boats carried as great loads previous to the lease as now, the draft of water must have been as great, therefor. The facts do not warrant the conclusion, that they have increased the tonnage to any such extent. On many levels they have dredged them out, made them deeper, and very much improved navigation.

It is to be regretted that a canal originally constructed of twenty-six feet on the bottom, forty feet on the top and four feet deep, and which

did in most places furnish navigation for boats drawing more than three feet of water, and capable of carrying seventy-five to eighty tons, should by the lease be required only to "be kept in a condition for prompt, speedy and successful navigation for boats not drawing more than three feet of water," when loaded deeper than this, are considered by the Lessees as overloaded, and the cause of the trouble boatmen have in passing each other, and navigating the canal.

The testimony as to the condition of the canals at the time of the lease (June 1, 1861,) compared to the present, is very conflicting; ten boatmen testify that it is in worse condition now than when leased, and ten that it is in better condition; ten employes brought on the witness stand by Lessees, testified that it was also better; three shippers thought it better.

Many were of the opinion that the levels had been raised; but when, and at what time, could not be determined.

The evidence shows that generally the Lessees have been prompt in making needed repairs to breaks and structures.

Evidence was introduced voluntarily, by the Lessees, showing that the millers at Akron, did not draw water from the Ohio canal, at Lock No. 1, of the Pennsylvania and Ohio canal. Some complaint was made that the water was unnecessarily wasted at the reservoir during the winter of 1870 and 1871, but the evidence is too conflicting to warrant me in saying such was the case.

On some levels, meeting places have been made for boats to pass each other. The evidence shows that except during the drouth of 1871, boats could navigate the canal from Cleveland to Hebron, only drawing three feet of water. The original cross sections of the canal cannot be expected to be found; but it should be of sufficient width for loaded boats to pass without difficulty.

The dry weather of the past two years very materially diminished the supply of water in the Portage reservoirs, and it was very difficult to furnish enough for the vast amount of business done on this end of the canal. The Licking Summit was so low, that no through business could be done on the canal, except a few days in the first of the season.

I have prepared a statement, showing the amount of wheat and coal carried into Cleveland, on the Ohio canal, since it was in operation, to 1860, then a statement of coal alone to 1871. It will be seen for the past years, that the coal trade increased in importance until 1855, then the Cleveland and Mahoning Railroad Company, having control of the Pennsylvania and Ohio canal, increased the tolls so much, that coal could not be transferred to the Ohio canal with profit. The coal shipments decreased until 1859, when mines were developed at Akron, Massillon, Canal Dover,

etc.; business increasing every year. More coal was carried to Cleveland in 1871, than any year before.

Year.	Bushels of wheat.	Bushels of coal.	Year.	Bushels of wheat.	Bushels of coal.
1832.....	288,722	12,900	1847.....	2,195,581	1,212,887
1833.....	386,760	49,131	1848.....	1,573,427	1,959,210
1834.....	333,868	95,634	1849.....	862,810	1,827,040
1835.....	387,232	50,473	1850.....	1,192,559	2,347,844
1836.....	463,821	84,124	1851.....	2,529,699	2,992,343
1837.....	548,697	184,648	1852.....	2,920,534	3,940,749
1838.....	1,229,012	73,292	1853.....	1,817,677	4,969,174
1839.....	1,515,820	134,881	1854.....	657,269	4,885,003
1840.....	2,155,407	172,206	1855.....	No statement.	6,339,404
1841.....	1,564,421	418,370	1856.....	384,007	5,184,344
1842.....	1,311,665	466,844	1857.....	289,446	4,055,011
1843.....	813,536	387,834	1858.....	353,895	2,243,029
1844.....	976,551	540,305	1859.....	29,433	1,930,961
1845.....	229,105	878,785	1860.....	211,674	2,018,175
1846.....	1,597,597	850,931			

	Bushels coal.
From June 1, 1861, to Nov. 30, 1861	1,685,376
“ Nov. 30, 1861, to Nov. 30, 1862	2,882,488
“ “ 1862, “ 1863	3,862,207
“ “ 1863, “ 1864	3,236,148
“ “ 1864, “ 1865	3,826,229
“ “ 1865, “ 1866	4,427,608
“ “ 1866, “ 1867	4,694,337
“ “ 1867, “ 1868	4,886,744
“ “ 1868, “ 1869	5,762,263
“ “ 1869, “ 1870 (miner's strike).....	2,929,167
“ “ 1870, “ 1871	6,618,786

A large business has developed upon the northern end of the canal, as will be seen from the number of clearances issued at Cleveland:

	Bushels coal.
June 1st, 1861, to Nov. 30th, 1861 (6 months)	1,261
Dec. 1st, 1861, “ 1862	1,966
“ 1862, “ 1863	2,621
“ 1863, “ 1864	2,642
“ 1864, “ 1865	2,560
“ 1865, “ 1866	2,608
“ 1866, “ 1867	3,080
“ 1867, “ 1868	2,988
“ 1868, “ 1869	3,407
“ 1869, “ 1870 (miner's strike)	2,213
“ 1870, “ 1871	4,001

This great increase of business will soon require larger quantities of water on the summit. The limited time only permitted me to spend part of two days in examining the Portage Summit reservoirs. Their position is shown on the appended map of Summit county.

When the canal was first constructed the river and lakes furnished sufficient water without any storing, and not until 1840 were the reservoirs constructed. The water-shed to the lakes and river is so steep that, since the country has been partially cleared, the water rises and falls very quickly in them, and is soon discharged. The flow is not so continuous as when the dense forests surrounded the lakes and covered the hill-side. The reservoirs are supplied from the Tuscarawas river, and the outflow of Turkey Foot lake.

In ordinary seasons a large portion of the water has to be wasted.

Turkey Foot lake can be dammed at a point indicated, by a bank of not over one hundred feet on the top, thereby saving a large amount of water during an ordinary season, available for a dry time.

As far as the banks of the lake were examined, they are steep, having a slope of not over $1\frac{1}{2}$ to 1, so the lands to be flooded would not be largely augmented, as far as could be seen. A dam was built at this same point years ago for a saw-mill.

As this plan would supply sufficient water to the Summit, I think it much more desirable than to attempt to restore the Pennsylvania and Ohio canal from Ravenna to Akron, its water not entering the Ohio canal until it reaches the foot of Lock No. 16. The accompanying map will be found sufficiently explicit without any further explanation.

Where mills take water from the canal, permanent weirs should be placed so that they can only draw the surplus water not required for navigation.

The importance of the Ohio canal to the business of the State will warrant it being well cared for, and soon I think its enlargement, at least of the northern end, will be required by the demands of the increasing coal trade.

Years ago the revenues from the canal fluctuated in proportion to the success or failure of the wheat crop; but now, that coal performs so important a part in manufactures, its shipments will doubtless be more uniform.

On my division, the canal was frozen up, the stone locks full of water, the large accumulation of ice in the foot of most of them rendering the sills almost inaccessible. The stage of water not being uniform in the levels, my gauging of the depths were too uncertain to be reported.

Owing to the above-mentioned facts, and the limited time, this hasty examination is very unsatisfactory to me. If deemed expedient, I would like an opportunity to cross-section the canal, at least from Cleveland to Akron, and report at some subsequent time.

P. H. DUDLEY,

Special Commissioner to inspect the Public Works of the State.

April, 1872.

REPORT OF DIVISION No. TWO.

On the 12th day of February I entered upon the duties of my appointment, taking the division of said work assigned to me, consisting of the Ohio canal from Portsmouth to Hebron, the Hocking canal, and the Muskingum improvement. I first commenced my duties by taking the testimony of several persons at various points connected with said canals and improvement, such as shippers, millers and boatmen; and hereto appended will be found the depositions taken, and also a number taken at the request of the lessees, referring to other portions of the public works of the State, as well as my division. I may remark that the parties who made the depositions, in the main, were men of business experience, long connected with the canals, and perfectly reliable. Their testimony embraces their opinions of the relative condition of that portion of the public works referred to in June, 1861, and the present time, in the year 1872. The burden of this testimony, it will be seen, is that the same are in as good a condition of repair at the present time as they were in June, 1861. The season of the year, and the severity of the weather, were not favorable to such a personal inspection as was desirable, or such as was satisfactory to myself. So far as I could, however, I made personal inspection of the structures and feeders on portions of the Ohio and Hocking canals, and on the Muskingum improvement from Zanesville to Marietta, the latter being free from ice when I passed over it. So far as I made this examination, I am satisfied, from my personal knowledge of the structures on the division referred to before the date of the lease, that they compare very favorably now with their condition in 1861.

As to the prism of the canals, I am unable to examine, and hence the testimony taken must indicate what it is now, compared to what it was when the lessees took charge of the public works in 1861. Before that time it was difficult for boats with full loads to navigate the Ohio canal from Hebron to Portsmouth; and the Hocking canal, from the testimony, it appears, there is still difficulty at some places, though it would seem there is some improvement. The points I more particularly refer to are the Lancaster side-cut, on the Hocking canal, which has always heretofore been a source of great annoyance to boatmen, and the eighteen mile level above Chillicothe, and the six mile level above Portsmouth.

The facilities the lessees have for doing work are shown to be much greater than those the State had. The testimony is almost uniform that they have at all times been prompt in doing their work, and in repairing breaches.

It appears that for the past two years there has been a short supply of water—that the drought has, in fact, been unusual—and navigation has been more or less embarrassed thereby, even where the feed of the canals has been supplied from living streams. The supply from the Licking Summit reservoir has been very deficient, and, as a consequence, navigation in the section of the Ohio canal supplied from it, as well as navigation on the portion of the Hocking canal which gets its supply from the same source, failed entirely last season because of the deficiency of water in the reservoir.

I found no one among the witnesses I examined, nor did I hear any intimation, that the lessees had not been diligent in taking care of what water reached the reservoir. The testimony shows that the feeder which conveys the water to it was in good condition during the year. I also made a personal inspection of the reservoir, its feeder, and the dam at Kirkersville. I found the banks in a good and safe condition. The lessees had been strengthening them by putting on some stone protection wall at points where there had been none heretofore, and the feeder is in a much better condition than I have ever known it, by having been deepened and new waste gates put in, instead of an old weir, to regulate the water, and the dam at Kirkersville was perfectly tight, and the gates and bulk-head for passing the water into the feeder, from the south fork of Licking, are new, and in good, sound condition. But this reservoir has, for years past, been gradually failing to supply the portion of the canal it was intended to furnish with water; and the past two years of drought has fully demonstrated what has long been anticipated by the older and more experienced canal men, that it would prove inadequate in case of a drought similar to the present one.

On the 15th of March, the day I visited the reservoir, I took the following measurements in the old reservoir: The surface of water is 6 feet $4\frac{1}{2}$ inches below top water line, and in the new reservoir 3 feet $10\frac{1}{2}$ inches below top water line, being about one-fourth the quantity there should be in it at this season of the year. Unless we should have unusually good rains between now and the month of June, there will necessarily be a suspension of navigation on that portion of the canals, as there was during the past year. There are but two plans to remedy this difficulty. One, and the more permanent, will be to build an additional reservoir (as has heretofore been surveyed, estimated, and recommended by the Board

of Public Works, in a special report, February 2, 1857, to which I most respectfully refer) in Bloody Run swamp, covering an area of about 1,390 acres, at a cost of \$124,595 at that time. The cost now would exceed that in the proportion of increased labor and value of land. It would have an available capacity of 411,171,152 cubic feet, and, being disconnected with the other, could always be held in reserve for the dry season of the year, or seasons of drought, the quantity of water thus reserved being nearly two-thirds of the amount that is in the present reservoir, and would be an abundant supply for all future use of the canals. The other plan is the widening of the South Fork feeder, so as to admit the passing of the entire volume of the stream into the feeder, that when the water in the reservoir was down the whole amount of water in the South Fork could be saved. This could be done at a probable cost of about \$15,000, and would render temporary relief, and keep an abundance of water at all times, except in time of extreme drought.

The present Licking Summit reservoir contains an area of 2,700 acres when the surface is at top water line, with an available capacity of 616,606,678 cubic feet.

In connection with the reservoir is what is known as the "deep cut," at Millersport, which is nearly three miles in length. The deepest part of this cut, near the center, is about 34 feet, gradually diminishing in depth toward each end. The banks have a slope of about one foot eight inches base to each foot of perpendicular elevation. The ridge at this summit divides the waters of the Scioto from those of the Muskingum. The wash on the slopes has, for a number of years, been filling up the prism of the canal so much that it was with great difficulty boats could get through it when there was a scarcity of water. The lighting them through was attended with great expense, and last season the water became so low that navigation was suspended not only at that point, but down the Ohio canal to Lockville, and the Hocking canal, through the Lancaster side cut. The lessees put their dredge at work at the north end, working south. They dredged 7,237 feet in length of the canal. About one-half of this was double dredging, being about 35 or 40 feet in width; the balance was single dredging, about 20 feet in width. The average depth was about two feet and-a-half in the center. The average cutting at the sides was about three and-a-half feet—this for about half the distance through the deep cut, but it will still require about one-quarter of a mile of as deep dredging as the above. The balance will require an average dredging of about two feet in the center. The dirt dredged out was deposited on the side of the bank, and protected by stake-piling. It was a matter of doubt whether it would stand in that position, but up

to the present time it has not given away any. It was the intention to have removed it on floats, which were procured for that purpose, but they were not enabled to float them alongside of the dredge, and had at last to withdraw the dredge for want of sufficient water to operate it. But the Lessees intend to complete the balance this spring, to be ready for summer and fall navigation, in case they have water. When once dredged out in the above manner, navigation will be better than it has ever before been since it was a canal. But to make the work at deep cut effective, and prevent the washing in of material from the large amount of surface on the slopes, it would be well to have driven a row of piling on each side of the prism of the canal the whole length of the cut, at a probable cost of about \$10,000.

It is shown by the testimony that the growth of grass in the Ohio canal is a serious obstruction to navigation. This difficulty is an inheritance, having been a source of complaint for many years. It is hard to tell how it originates, but I believe one cause is from the boatmen throwing the manure and hayseed from their stables into the canal, seeding and fertilizing it at the same time. This they should not be permitted to do under the penalty of a fine. There are various opinions as to the mode of getting rid of it, but the most effectual is the bottoming out of the canals. The Lessees, it is shown, are generally prompt in cutting it in the same manner that the State did before the canals were leased.

The absence of proper guages, as regulating weirs to the lessees of water-power, and their proneness to draw down the levels in seasons of low water, is another embarrassment in the same way. This should be corrected by the insertion of proper guages, or weirs, since nothing but the surplus water, not necessary for navigation, is, or can, under the law, be leased. I think, for the purpose of preserving the rights of all parties interested, an adjustable weir, or guage, could be placed in so as to render satisfaction.

The next point of serious difficulty, and needing attention to be permanently remedied, is the Circleville feeder-dam. This dam should be raised about two feet, and a lift lock built at Yellowbud, to correspond to the increased height of the dam. To accomplish this, however, the mill-power at the Foresman mill would have to be condemned. This improvement would cost about \$18,000; and in this case, I would again respectfully refer you to a special report of the Board of Public Works, on this subject, of March 22, 1859.

The improvement of the outlet from the canal into the Ohio river, at Portsmouth, is also important, and, indeed, necessary. The present connection between the two, if it can be called a connection, is entirely insu-

ficient, not being available six months in the year. From this cause the canal is deprived of a large amount of freight that will not admit of transfer from the canal to the river. The necessities of commerce, I think, require the improvement recommended.

In regard to the capacity of boats on this division of the canal, there is no weigh-lock or gauge to determine the exact tonnage, as they have on the northern division at Cleveland. The State has the scales for a weigh-lock at Lockland, not in use, for which it is paying heavy storage. These scales could be used to very good advantage if they were put in at Unionville, near Portsmouth.

In relation to the model of boats, the evidence shows that there has been a great improvement in that direction since the completion of the canals. Originally they carried only about forty tons, but at that time they also carried passengers, having to occupy some of the space for that purpose. They were built with a sharp bow, stern, and keel, but now they are built with a round bow and stern, and flat bottom, entirely for freight, and they carry a greater load on the same level, the amount now being from sixty to sixty-five tons.

The usual spring repairs on the Ohio and Hocking canals have not yet been made. The early freezing up of the canals, and the severity and duration of the winter, have rendered it necessary to give boats an opportunity to navigate a few weeks to move freight that has accumulated before the water is drawn to make repairs. The necessary preparation has been made by the lessees to commence making the repairs as soon as the accumulations of freight have been moved. The most important piece of work, in the way of repairs, will be the rebuilding of the superstructure of the aqueduct over Deer creek, in Ross county. The material is ready. The abutments and piers of this structure were partially rebuilt last fall, but the work was not finished on account of the severity of the weather. The stone work will be completed this season.

Considerable work will be required on the flight of locks at Lockbourne, and this the lessees are in readiness to do.

The completion of the dredging in the deep cut has commenced, and, I am assured, will not be delayed. The ordinary repairs to locks and lock-gates, the taking out of bars, and all other work incident to every season will commence as soon as possible. Stone is prepared in part or in whole for rebuilding one of the flight of locks at the State dam below Circleville. The head-wall of the guard-lock, above Winchester, will need repair during the summer or fall, depending upon the season. The large aqueduct at Circleville, and the one also at Brush creek, will each need some attention, probably a new roof, and the strengthening of the chords.

On the Columbus feeder there will be needed some cleaning out or dredging, on the four-mile level.

The usual preparation has been made on the Hocking canal for spring repairs, which will be done when the water is drawn. Some new lock-gates will be required, also the fitting up of the mitre-sills and flooring in some of the locks.

On the Muskingum Improvement, the most important work that will require attention this summer, will be the outlet-lock at Harnar, and the lock at Taylorsville. The former has apparently been in a critical condition for some length of time, but proper caution will not permit it to remain so any longer without having some work done to protect it. Some of the stone in the Taylorsville lock have proved to be of a very inferior quality, and are fast disintegrating, particularly in the chambers, and should be repaired without delay. The other locks are in very good condition, showing some little disintegration in the last ten years. The dams are all in good order, but will require the usual tightening. Some of the timber-cribs will require reconstruction, and the annual dredging of the bars at the chutes will have to be done.

There are bridges at several points on the canals which are below the regular height prescribed by law, and should be changed, as they are the means of damaging deck-freights.

There is a common practice at the towns and villages on the canals of letting the water from their gutters drain into the canal, taking in a large amount of sediment. Manufacturing establishments also empty their offal into the canal, thus making a cess-pool of the canal, and creating obstructions of a serious nature.

The boatmen are not held under that restraint by law that they should be. I understand that in going into locks they jam and jar the walls in such a manner as to make them leak. These practices should be checked, and in view of the fact a thorough revision of the canal laws should be made.

While the lessees have fulfilled the requirements of the law, under the lease, the canals are not what they should be to keep up with the progress of the times. There seems to be an opinion entertained by a large class of persons that they have performed their mission, which is a very grave error. As the drought of the past two years has fully demonstrated, in depriving us of their use, we can plainly see the necessity of them. By the advantage railroad corporations have taken in charging onerous tariff rates on freights, I know they look upon them as not very formidable competitors; but those who have been forced to ship by rail would gladly avail themselves of the chance to ship by canal, when water can be provided so that they can do so. To-day there is as great a necessity to have

the canals enlarged to do an increased business, as there was for their original construction. They were the means of reducing the wilderness of Ohio to fertile fields; and now, our agricultural developments being well accomplished, our mining and manufacturing interests, which are yet in their infancy, as the geological surveys now being made point out new and unexpected fields for development, which will require cheap modes of transportation to be brought to its aid, and that can not be done in any other way to such an extent as it would be by the improvement of your canals. On railroads the minimum cost of carrying coal is $1\frac{1}{2}$ cents per ton per mile, and on canals one-half that rate.

The enlargement I would recommend would be the dredging out of the prism to their original dimensions, and placing thus obtained on the towing-path and berm bank in a uniform manner, so that wherever the banks were not high enough they would be raised to such a height as to admit of five feet of water in the canal, and lengthen the locks 40 feet, so that boats 118 feet long could be used, carrying 170 tons. With the effective means at hand for dredging, I can see a hope for the restoration of the canals to their original dimensions. The dredge the Lessee Company now have has only been perfected within the last three or four years at a considerable cost in experimenting, but it meets the case, and does its work well, excavating from 300 to 400 cubic yards, or the work of 100 men per day, in wet or dry weather, and this work can be carried on without having to suspend navigation. They can dredge in all seasons of the year, save when there is ice. The locks can be built in the winter season when navigation is suspended. This enlargement can be accomplished, as shown by an approximate estimate made by the veteran canal engineer, Samuel Forrer, on the Miami and Erie canal, for the sum of \$2,015,000; and the Ohio canal for the sum of \$3,200,000; and at a total cost for the two canals of \$5,215,000.

To this report, and estimates made to the board February 2, 1870, I would respectfully refer you. But for the purpose of ascertaining more accurately the actual cost of such an enlargement a careful survey should be made.

JOHN B. GREGORY,
Special Commissioner.

REPORT OF THE CONDITION OF THE MIAMI AND ERIE CANAL, BEING DIVISION No. THREE OF THE PUBLIC WORKS OF OHIO.

Immediately after the meeting and organizing of the Board of Special Commissioners, on the 6th of February, 1872, the work of inspection was commenced on this division and pushed forward as fast as practicable. The canal being then mostly covered with strong ice, the work of sounding the depths through holes cut in the ice, was commenced at Cincinnati, and continued up to near Middletown, where the weakness of the ice required the use of a long plank, which was then taken along and thrown over the ice where soundings were to be made. This answered the purpose, until we approached near to Dayton, where the center of the canal was found to be destitute of ice, and the plank of no more use. Testimony was then taken at Dayton and at Piqua, and the work of sounding recommenced on the Summit level, where the ice would bear, and was continued on to the State line and to Toledo. When this was done, the ice had so melted in that portion of the canal between Cincinnati and the feeder below Troy, that the locks could be seen and worked. This portion of the canal was then passed over and the locks inspected. The whole of the Miami and Erie canal, the Wabash canal to the State line, and their feeders were passed over and inspected, the reservoirs seen, all the locks and other structures seen and inspected so far as could be in their icy and frozen condition, except the Lewistown reservoir, and the Sidney feeder and dam; a visit to which the time would not permit. A small part of the feeder was, however, passed over; but the ice being too weak, the inspection was abandoned.

The space occupied by the full depth of two common sized canal boats, placed in contact, side by side, is about twenty-six feet wide. That is, if two common sized boats are loaded to draw three feet of water and placed side by side in contact, they will require a depth of three feet of water twenty-six feet wide to float them. The method, therefore, adopted for taking the soundings was to find two places of equal depth, one on each side of the canal, and twenty-six feet apart; an other sounding was then taken midway between these two. These three soundings, with the known width of the canal, give the depth of water, and a sufficiently

close approximation to the capacity of the water-way of the canal. The results of these soundings will be found in the annexed tables. In which the 1st column contains the distances in miles; the 2d column contains the least depth of the center of canal; the 3d column contains the least depths of the sides thirteen feet from the center; the 4th column contains the greatest depth of the center; the 5th column contains the greatest depth of the sides thirteen feet from the center; the 6th column contains the average depth of the center; the 7th column contains the average depth of the sides thirteen feet from the center; and the 8th column contains the least cross section of the water-way. These soundings were taken at from two to six places in each mile, except in a few places where the banks are higher than the outside grounds, in which places they were taken but once in each mile. The depths, averages and cross sections are made out on each mile, level, or other distance as shown in the tables.

The depth of water in the canal as constructed, was four feet on a width of twenty-six feet, and the area of cross section was one hundred and thirty-two square feet. To have the canal in its best condition, this depth and area must be maintained. This, however, is never done for any considerable length of time. But when it has been allowed to fill up with sediment so as to have less depth than 3.9 feet at center and 3.4 feet at 13 feet on each side from the center, with a cross section of only 118.8 square feet, (a diminished capacity of ten per cent.) it is believed to be in bad condition.

It is shown by the soundings, that between Cincinnati and Dayton (66 miles), there are many places where two boats drawing three feet water cannot pass each other, the side soundings showing less than three feet depth of water. It is also shown that the cross sections of water are in many places not sufficiently large for the easy passage of loaded boats. It is believed that the portion of canal between Dayton and Troy (20 miles), is in about the same condition as to depth of water as that between Cincinnati and Dayton. That portion between Troy and Lockport (14 miles), is believed to have a little better depth of water than the portions last named. The Summit level (23 miles), having been constructed for five feet depth of water, and thirty feet width on bottom, is shown by the soundings to have, with one or two exceptions, an ample depth and width of water. From the Summit level to the Junction (55 miles), the canal was constructed for four feet depth of water and twenty-six feet width on bottom, and is shown by the soundings to have, with very few exceptions, an ample depth and width of water. From the Junction to Toledo (71 miles), the canal was constructed for six feet depth of water and sixty feet width of surface. Wherever soundings

could be taken on this part of the canal, the water was found to be sufficiently deep and wide for the passage of all boats that can run on the other parts of the canal, and it is believed, from what could be seen, that there is no want of capacity in any of this portion of the canal. The Wabash canal, from the Junction to the State line (20 miles), was constructed for five feet depth of water, and its water capacity is shown by the soundings to be sufficient for easy navigation.

For the purpose, it seems, of maintaining a sufficient depth of water in the canal, as its bottom was raised by the deposit of sediment, the water has been raised in each level, as shown in the table of soundings. When this process of raising the levels commenced, or how long it has been in progress, could not be ascertained.

At the time the work of inspection was commenced none of the locks were in such condition as to admit of inspection. They were so covered and loaded with ice that the gates could not be worked, and but little of either gates or locks could be seen. On the 18th instant the ice had disappeared from all the locks between the feeder near Troy and Cincinnati, when they were again passed over and inspected. No other locks on the canal have been in condition to admit of inspection since the work of inspecting was commenced. Statements of the condition of those inspected will be found in connection with the soundings. The locks on the canal, from Lockport to Cincinnati, and from Defiance to Toledo, are constructed of stone. Nearly all of those on the other portions of the canal are constructed of wood. The wooden locks, so far as could be seen, appeared to be sound, but they were empty, and the gates so ice-bound that they could not be moved, consequently their working qualities could not be tested, nor their condition for holding water known. Almost all of the stone locks are in bad condition. The walls of many are much sprung and shattered, and nearly all of them leak—many of them very much. The gates generally leak much more than they should. There are also some very great leaks under the miter-sills, and through the floors of some of the locks. In each pair of gates in these locks are four wickets for filling and emptying the locks. This large supply of wicket-openings make it possible to work locks that have very much leakage, but the leakage, to say the least of it, is that much water wasted.

From the testimony taken it appears that much difficulty has been experienced by the irregular and improper use of water by the mills on the canal. Some arrangements that would constantly and evenly pass the regular flow of water in the canal from one level to another, whether used as power or not, would be much for the interest of not only the boatmen, but also for those using the water power. These arrangements should be

such as would put it out of the power of any designing person to stop or in any way derange the flow of water.

The tow-path appears to have been much neglected, and a great portion of it is in very bad condition. Much of that south of the Summit has not sufficient width, being only from three to five feet in width on top—generally about four feet wide. All of the tow-path that has been recently raised is of this narrow kind. In some places material dredged from the canal is thrown in heaps on top of the tow-path, leaving only a deep-worn track, one-and-a-half or two feet wide, in which the horses could travel. In other places deep tracks were worn in the tow-path and suffered to remain. On the Summit, and north of it, the tow-path was generally in better condition, the narrow portion being much less in extent. There is, however, owing to the wearing down of the tow-path, and the raising of the water in the canal, much of the tow-path that is only about one foot above the water, and in some places less than one foot. The tow-path was constructed at least ten feet wide on top, and can not be considered in good condition with less width than seven feet. To expend their force with the greatest effect on the tow-line, the horses must be arranged in the line of the tow-line extended. This will place them partially across the tow-path, requiring for three horses a considerable width on straight canal, and still more on curved. It also requires about seven feet in width to pass two teams.

The reservoirs appear to be in good condition to hold water, but in consequence of the small amount of rain in the last two years they are at present nearly empty. The St. Mary's reservoir has but seven or eight inches of water above the level of the feeder. The water in the others, though not so low, is far below the usual height for this season of the year. These reservoirs, it appears, have not yet failed to supply the necessary amount of water, but if the quantity of rain is not increased over that of last year, some economy in the use of water will be required to make it hold out during the coming season.

The feeder-dams and feeders appear to be in good condition, except the dam on the Maumee river at what is called Providence slack-water. The leaky condition of this dam is such that during the low stages of the river it will not maintain a sufficient depth of water over the rocky bottom at the lower end of slack-water. For a long time in the driest season of last year boats had to be partly unloaded and lightened over this shallow water, causing much delay and great expense. It also failed to supply the canal below with sufficient water for the mills, some of which had to suspend operations during the low water.

The only means of determining the condition of the canal at this time as compared with its condition in the year 1861, when the lease was

given, was by taking the testimony of boatmen who had been engaged in boating on the canal during the last ten or more years. This was done wherever such could be found, and their testimony is hereunto annexed. Almost the whole of this testimony, it will be seen, goes to show that the canal was in fully as good condition for navigation at the close of navigation in the year 1871 as it was in the year 1861.

I have been informed that an attempt was made some time since to supply water to the St. Mary's reservoir through the Sidney feeder, and that a canal for that purpose was constructed (a part of which was seen), which, through some blunder of the engineer in charge of the work, failed to answer the purpose for which it was intended. It is believed that this means of supply could be accomplished without very great expense, and during a considerable portion of the year would furnish water from the Miami river that would greatly add to the scanty supply of water in this reservoir. This is a matter that seems to demand at least some further investigation, since the experience of the last two years suggests the probability of an insufficiency of supply.

MIAMI AND ERIE CANAL.

Distance in miles.	SOUNDINGS.							LOCKS, LEVELS AND REMARKS.
	Least depth at center.	Least depth at 13 feet from center.	Greatest depth at center.	Greatest depth at 13 feet from center.	Average depth at center.	Average depth at 13 feet from center.	Least cross section of water.	
	feet.	feet.	feet.	feet.	feet.	feet.	sq. ft.	
1.....	3.2	2.2	3.7	2.8	3.6	2.3	.....	Canal from Cincinnati to the Summit Level was constructed for 4 feet depth of water, 26 feet wide on bottom, and 40 feet wide at top water line. Cross section of water 132 sq. ft. between Broadway and Plum sts.
2.....	3.7	2.7	3.9	3.2	3.8	2.9	109	
3.....	3.6	2.6	3.8	3.2	3.7	2.8	108	
4.....	3.8	2.8	4.0	3.2	3.9	3.0	108	
5.....	3.8	3.0	4.3	3.5	4.0	3.1	111	
6.....	3.7	2.8	4.3	3.4	3.9	3.0	107	
7.....	3.5	3.4	4.0	3.4	3.7	3.6	109	This level is raised 0.4 feet.
8.....	3.3	3.0	4.0	3.7	3.8	3.4	112	
9.....	3.7	3.0	4.0	3.9	4.0	3.6	110	
10.....	3.5	3.1	4.0	3.5	3.7	3.3	114	
11.....	3.8	3.1	4.0	3.4	3.9	3.3	114	
12.....	3.8	3.2	4.2	3.7	4.0	3.4	118	
.....	3.8	3.0	4.4	3.9	4.1	3.3	116	Lock No. 12, below Middletown Feeder; gates and miter-sills leak very much; walls shattered and leak some; level raised 0.0 feet; tumble needs rebuilding.
.....	3.5	3.2	3.5	3.2	3.5	3.2	.....	Lock No. 11—walls sprung, shattered and leak some; very great leaks under miter-sills.
.....	.....	At Lock land.	.....	.....	.....	.....	.....	Level raised 0.3 feet.
.....	3.7	3.0	3.7	3.0	3.7	3.0	.....	Lock No. 10—walls in good condition; very great leaks under miter-sills; level raised 0.2 feet.
.....	3.7	3.0	3.7	3.0	3.7	3.0	.....	Lock No. 9—walls much shattered and sprung, and leak very badly.
13.....	.....	.....	.....	.....	.....	.....	.....	Gates and miter-sills leak very much; earth washed from behind the wall by leaks through the wall.

14.....	3.8	2.8	4.0	3.3	3.9	3.0	97	
15.....	4.0	2.9	4.1	3.1	4.0	2.9	110	Level raised 0.15 feet.
16.....	4.0	2.9	4.1	3.6	4.0	3.3	112	
17.....	4.0	3.0	4.2	3.2	4.2	3.1	116	
18.....	4.0	2.9	4.3	3.2	4.1	3.0	112	
.....	4.0	2.9	4.1	3.1	4.1	3.0	112	Lock No. 8—gates leak very badly; chamber walls sprung in 1.25 feet, and leak; walls badly shattered.
19.....	4.2	3.0	4.2	3.0	4.2	3.0	115	Level raised 10.4 feet.
20.....	3.8	2.6	4.2	3.0	4.0	2.8	115	
.....	4.1	3.0	4.2	3.3	4.1	3.2	116	Lock No. 7—gates leak very much; walls leak some.
21.....	3.9	3.0	3.9	3.0	3.9	3.0	113	
22.....	3.9	2.9	4.2	3.0	4.0	3.0	110	
23.....	4.3	2.9	4.4	3.2	4.3	3.1	114	
24.....	4.1	3.1	4.9	3.1	4.1	3.1	116	Level raised 1.05 feet.
25.....	4.3	3.0	4.7	3.3	4.4	3.2	122	
26.....	4.2	3.4	4.4	3.5	4.3	3.4	124	
27.....	4.2	3.0	4.3	3.3	4.2	3.2	120	
28.....	4.2	3.2	4.3	3.2	4.2	3.2	120	
29.....	4.2	3.1	4.6	3.1	4.4	3.1	119	Lock No. 6—gates leak badly; walls sprung; shattered and leak; level raised 1.3 feet.
.....	4.9	2.7	4.9	2.9	4.9	2.8	119	Lock No. 5—gates leak badly; walls leak some.
30.....	4.0	2.1	4.0	2.1	4.0	2.1	97	
31.....	3.5	2.2	4.1	3.2	3.8	2.5	90	
32.....	3.6	2.0	4.1	2.6	3.9	2.4	94	Level raised 0.9 feet.
33.....	3.9	2.5	4.2	3.0	4.0	2.8	107	
34.....	4.2	3.2	4.6	3.8	4.3	3.5	124	
35.....	4.0	2.4	4.8	3.6	4.4	3.1	107	Lock No. 4—leak under sills badly; gates leak some; walls sprung, badly shattered, and leak.
36.....	3.3	3.2	3.3	3.2	3.3	3.2	109	
37.....	3.7	3.1	3.7	3.1	3.7	3.1	110	Level raised 1.05 feet.
38.....	4.3	3.3	4.3	3.3	4.3	3.3	122	
39.....	4.3	3.6	4.3	3.6	4.3	3.6	130	Lock No. 3—gates leak much; walls sprung, shattered and leaky; level raised 0.4 feet; Dick's Creek Aqueduct need repairs.
.....	4.5	3.3	4.5	3.3	4.5	3.3	115	Lock No. 2—gates leak some; walls badly shattered.
40.....	4.2	3.3	4.4	3.5	4.3	3.4	126	
41.....	4.4	3.4	4.4	3.4	4.4	3.4	126	Level raised 1.1 feet.
.....	3.8	3.4	4.1	3.8	4.0	3.6	123	Lock No. 1—gates and walls leak some.
42.....	4.4	3.9	4.6	4.2	4.5	4.0	134	Feeder lever.
43.....	4.5	4.0	4.5	4.0	4.5	4.0	140	Level raised 1.8 feet.
44.....	5.2	4.2	5.2	4.7	5.2	4.4	151	Lock No. 11—below Mad River Feeder; gates and walls leak some; level raised 0.85 feet.

MIAMI AND ERIE CANAL—Continued.

Distance in miles.	SOUNDINGS.							Locks, Levels and Remarks.
	Least depth at center.	Least depth at 13 feet from center.	Greatest depth at center.	Greatest depth at 13 feet from center.	Average depth at center.	Average depth at 13 feet from center.	Least cross sec- tion of water.	
	feet.	feet.	feet.	feet.	feet.	feet.	sq. ft.	
.....	4.4	2.6	4.9	3.0	4.6	2.8	117	Lock No. 10—gates leak; walls shattered, sprung and leaky.
45.....	4.1	1.8	4.1	1.8	4.1	1.8	93	
46.....	4.1	1.8	4.6	2.1	4.4	2.0	93	Level raised 1.6 feet.
47.....	4.2	2.4	4.3	2.6	4.3	2.2	104	Lock No. 9—gates or sills leak much; walls sprung, and leak some.
48.....	4.2	2.2	4.2	2.2	4.2	2.2	99	Level raised 0.7 feet.
.....	3.5	2.2	4.2	3.0	3.5	3.0	99	Lock No. 8—gates or sills leak very much; walls shattered and leak.
49.....	3.9	1.6	4.5	2.1	4.2	1.8	93	
50.....	3.9	1.8	3.9	1.8	3.9	1.8	89	Level raised 1.55.
51.....	4.0	2.0	4.1	3.4	4.1	2.7	93	Lock No. 7—gates leak much; walls sprung and leak.
52.....	3.7	3.0	4.5	3.4	4.0	3.4	118	
53.....	3.9	3.4	4.6	3.6	4.0	3.5	121	Level raised 0.9 feet.
54.....	4.4	3.3	4.7	4.3	4.4	3.8	120	
.....	3.1	3.9	4.4	3.9	4.4	3.9	137	Lock No. 6—walls shattered some.
55.....	3.4	3.0	3.4	3.0	3.4	3.0	105	
56.....	4.3	2.8	4.3	2.8	4.3	2.8	114	Level raised 1.4 feet.
57.....	4.8	2.8	4.8	3.8	4.8	2.8	139	Lock No. 5—gates and walls leak much; level raised 0.8 feet.
.....	4.0	3.2	4.0	3.2	4.0	3.2	116	Lock No. 4—gates leak very much; walls leak some.
58.....	4.3	3.0	4.5	3.3	4.4	3.2	118	Level raised 0.55 feet.
59.....	4.4	3.2	4.8	3.6	4.6	3.4	122	Lock No. 3—gates leak; walls leak; level raised 0.3 feet.
60.....	4.2	3.0	4.8	3.4	4.5	3.2	118	Lock No. 2—gates leak much; walls leak much.
61.....	4.7	3.0	4.8	3.5	4.8	3.3	123	Level raised 0.5 feet.
62.....	4.6	3.5	4.6	3.5	4.6	3.5	131	

63	}	Could not be sounded, but is believed to be in as good condition as the	}	Lock No. 1—gates leak much; walls leak some; level raised 0.5 feet.		
64					}	other part of the level.
65						
66	.....	Level not sounded.	.....	Lock No. 20—from the Summit Level, gates leak much; walls leak some; Mad River Aqueduct in good condition.
.....	.....	Level not sounded.	.....	Lock No. 19—gates leak much; walls shattered, and leak some.
.....	.....	Level not sounded.	.....	Lock No. 18—gates and walls leak much.
.....	.....	Level not sounded.	.....	Lock No. 17—gates leak very much.
74	.....	.....	.....	Walls shattered, and leak.
75	.....	.....	.....	Aqueduct over Miami River. It appears to be in good condition.
77	.....	.....	.....	Much ice on it.
.....	Level not sounded	.....	.....	Lock No. 16—walls sprung, and leak.
78	.....	.....	.....	Gates leak badly.
.....	Level not sounded	.....	.....	Lock No. 15—gates and walls leak very much.
81	.....	.....	.....	Feeder from the Miami River.
84	.....	.....	.....	Brush dam.
.....	Level not sounded	.....	.....	Lock No. 14—walls shattered some.
85	.....	Water out of this level; ice in it	.....	Lock No. 13—It could not be properly inspected.
86	.....	.....	.....	.....
87	.....	Water out of this level; it appears to need cleaning out.	.....	Lock No. 12—walls considerably shattered. Examination imperfect.
88	.....	.....	.....	.....
89	.....	.....	.....	.....
90	.....	Water out of this level; ice in.	.....	Lock No. 11—walls leak. Inspection not complete.
91	.....	.....	.....	.....
.....	Level not sounded	.....	.....	Lock No. 10—walls leak badly. Gates frozen and could not be worked.
92	.....	.....	.....	.....
93	.....	.....	.....	.....
94	.....	Level not sounded	.....	Lock No. 9—could not be inspected.
95	.....	.....	.....	.....
96	.....	.....	.....	.....
97	.....	.....	.....	Feeder from the Miami River—dam in good condition.
.....	Level not sounded	.....	.....	Lock No. 8—could not be inspected.
98	.....	.....	.....	Water out.
.....	.....	.....	.....	Aqueduct over Laramie undergoing repairs.

MIAMI AND ERIE CANAL—Continued.

Distance in miles.	SOUNDINGS.							LOCKS, LEVELS AND REMARKS.	
	Least depth at center.	Least depth at 13 feet from center.	Greatest depth at center.	Greatest depth at 13 feet from center.	Average depth at center.	Average depth at 13 feet from center.	Least cross sec- tion of water.		
	feet.	feet.	feet.	feet.	feet.	feet.	sq. feet.		
	Water out of these levels								Locks No. 7, No. 6, No. 5, No. 4, No. 3, No. 2, and No. 1, at Lockport, could not be fully inspected. One of them was in process of rebuilding a part of the walls which had fallen down. The walls of another was badly fractured, but the qualities for holding water could not be tested, as the water was drawn off Lock No. 1.
100								Summit Level—entrance of the feeder from Lewistown Reservoir. The Summit Level was constructed for 5 feet depth of water, 30 feet wide on bottom, and 47.5 feet wide at the top of water. Cross section of water, 193.75 square feet.	
101	4.6	3.1	4.6	3.7	4.6	3.5	135		
102	4.6	3.6	7.1	4.7	5.6	4.2	146		
103	4.6	3.8	5.6	4.4	5.0	4.0	151		
104	4.3	3.1	4.6	4.0	4.5	3.4	115		
105	4.3	3.1	6.0	4.9	4.8	3.6	117		
106	5.0	3.8	5.3	3.9	5.2	3.9	160		
107	4.6	3.4	5.0	3.7	4.8	3.6	141		
108	4.9	3.7	5.4	4.4	5.2	4.0	153		
109	4.4	3.3	5.4	3.9	4.8	3.6	137		
110	5.3	3.9	5.5	4.4	5.4	4.1	162		
111	4.8	3.4	5.8	3.7	5.2	3.6	152		
112	4.6	3.6	6.4	4.7	5.2	4.0	145		
113	5.2	3.5	5.4	3.8	5.3	3.6	155		
114	5.4	4.2	6.7	5.7	6.0	5.0	170		
115	6.0	5.2	6.1	5.7	6.0	5.5	202		
116	5.4	3.6	6.7	5.4	5.9	4.5	156		

117	5.0	3.6	5.3	4.0	5.2	3.8	151	
118	5.0	3.3	5.7	3.9	5.3	3.6	153	
119	5.9	3.5	5.9	3.7	5.9	3.6	160	
120	4.6	3.6	4.9	3.6	4.8	3.6	146	
121	4.9	3.4	4.9	3.7	4.9	3.6	146	
122	5.3	3.4	5.5	3.9	5.4	3.7	151	
	5.1	3.9	5.1	3.9	5.1	3.9	160	
123	4.8	3.5	5.3	4.3	5.1	3.9	134	Lock No. 1. Level raised 1.0 foot. From the Summit to the Junction the canal was constructed for 4 feet depth of water, 26 feet wide on bottom, and 40 feet wide at top of water. Cross section, 132 square feet.
	5.0	3.6	5.0	3.6	5.1	3.6	117	Lock No. 2.
124	4.6	3.5	4.6	3.5	4.6	3.5	128	Level raised 0.9 feet.
	4.8	3.2	4.8	3.2	4.8	3.2	127	Lock No. 3.
125	4.8	3.7	4.8	3.7	4.8	3.7	137	Level raised 1.0 foot.
	5.6	3.7	5.6	3.7	5.6	3.7	145	Lock No. 4.
	5.1	3.7	5.1	3.7	5.1	3.7	140	Level raised 1.2 feet.
126	4.7	3.3	5.1	3.5	4.9	3.4	127	Lock No. 5. Level raised 0.8 feet.
	4.7	3.3	4.7	3.3	4.7	3.3	127	Lock No. 6. Level raised 0.6 feet.
127	4.7	3.5	5.6	4.1	5.2	3.8	131	Lock No. 7. Level raised 0.6 feet.
	3.8	3.2	3.8	3.2	3.8	3.2	113	Lock No. 8. Level raised 0.95 feet.
128	4.5	3.7	4.5	3.7	4.5	3.7	132	Lock No. 9. Level raised 0.75 feet.
	4.9	3.6	5.5	3.7	5.2	3.7	137	Lock No. 10. Level raised 1.3 feet.
	4.9	3.9	5.0	4.5	5.0	4.2	138	Lock No. 11—feeder from St. Mary's Reservoir enters.
129	4.3	3.7	5.6	4.7	5.2	4.3	130	Level raised 0.5 feet.
130	No soundings—water out.							Lock No. 12. In St. Mary's.
131	3.9	3.5	4.5	3.8	4.2	3.6	121	Lock No. 13. Level raised 0.7 feet.
132	4.6	3.6	4.6	4.0	4.6	3.8	131	
133	Open canal or deep, wide water; no soundings.							
134	Same as last—no soundings.							
135	Open canal—no soundings.							
136	No soundings—ice would not bear							Lock No. 14. Level raised 1.0 foot.

MIAMI AND ERIE CANAL—Continued.

Distance in Miles.	SOUNDINGS.							LOCKS, LEVELS, AND REMARKS.
	Least depth at center.	Least depth at 13 feet from center.	Greatest depth at centre.	Greatest depth at 13 feet from center.	Average depth at center.	Average depth at 13 feet from center.	Least cross section of water.	
	feet.	feet.	feet.	feet.	feet.	feet.	sq. feet.	
137.....	No sound	ings — ice	would not	bear				
138.....	5.8	3.7	6.2	4.3	6.0	4.0	156	
139.....	4.9	3.9	5.1	4.4	5.0	4.2	141	
140.....	5.1	3.8	5.1	4.0	5.1	3.9	143	
141.....	5.0	3.8	5.1	3.8	5.1	3.8	141	
142.....	4.3	3.6	4.7	3.9	4.5	3.7	125	
143.....	3.8	3.2	5.3	4.1	4.4	3.4	114	
.....	4.6	3.3	4.6	3.3	4.6	3.3	127	Lock No. 15.
.....	4.2	3.7	5.4	3.8	4.8	3.8	130	Level raised 0.5 feet.
144.....								Level raised 0.5 feet. Lock No. 16.
145.....	4.6	3.3	4.9	3.3	4.8	3.3	127	Level raised 0.7 feet.
146.....	4.2	3.2	4.9	3.3	4.6	3.2	122	Lock No. 17.
147.....	3.7	2.9	4.4	3.5	4.1	3.2	118	Level raised 0.3 feet.
148.....	3.7	2.7	4.5	2.9	4.2	2.8	106	Lock No. 18.
.....	4.4	3.4	5.6	3.7	5.0	3.6	132	Level raised 0.6 feet.
.....								Lock No. 19.
149.....	4.8	3.6	4.8	4.0	4.8	3.8	134	Level raised 0.9 feet.
150.....	5.1	3.6	5.2	3.6	5.2	3.6	139	Lock No. 20.
.....	Water drawn off	—no	soundings					
151.....	4.5	3.6	4.5	3.6	4.5	3.6	132	Lock No. 21.
.....	4.6	3.3	5.2	3.4	4.8	3.3	127	Level raised 0.6 feet.
152.....	3.4	3.6	4.6	3.6	4.0	3.6	116	Lock No. 22.
153.....	4.9	3.2	5.3	3.7	5.1	3.4	129	Level raised 1.1 foot.
154.....	4.8	3.9	4.9	3.9	4.9	3.9	142	Lock No. 23.
155.....	4.2	2.7	4.3	3.4	4.3	3.1	110	Level raised 0.8 feet. Lock No. 24.
156.....	No soundings	— water out, for repairs.						Level raised 0.7 feet. Lock No. 25.

157	No soundings	— wa	ter out, for	repairs	.....	.....	.....	Lock No. 26.
158	No soundings	— wa	ter out, for	repairs	.....	.....	.....	Level raised 1.0 foot.
159	No soundings	— wa	ter out, for	repairs	.....	.....	.....	Lock No. 27.
.....	No soundings	— wa	ter out, for	repairs	.....	.....	.....	Level raised 0.7 feet.
.....	No soundings	— wa	ter out, for	repairs	.....	.....	.....	Lock No. 28.
160	No soundings	— wa	ter too low	.....	.....	.....	.....	Level raised 0.6 feet.
161	No soundings	— wa	ter too low	.....	.....	.....	.....	.....
162	No soundings	— wa	ter too low	.....	.....	.....	.....	Lock No. 29.
163	No soundings	— wa	ter too low	.....	.....	.....	.....	Lock No. 30.
164	No soundings	— wa	ter too low	.....	.....	.....	.....	.....
165	No soundings	— wa	ter too low	.....	.....	.....	.....	.....
166	No soundings	— wa	ter too low	.....	.....	.....	.....	.....
167	No soundings	— wa	ter too low	.....	.....	.....	.....	.....
.....	No soundings	— wa	ter too low	.....	.....	.....	.....	Lock No. 31.
.....	No soundings	— wa	ter too low	.....	.....	.....	.....	Level raised 0.5 feet.
.....	No soundings	— wa	ter too low	.....	.....	.....	.....	Lock No. 32.
176	4.6	3.3	4.6	3.3	4.6	3.3	124	.....
177	5.0	3.0	5.0	3.0	5.0	3.0	125	.....
178	4.9	2.5	4.9	2.5	4.9	2.5	114	.....
Lengths of Levels, in miles.								Junction with the Wabash Canal. From this place to Toledo, the canal was constructed for 6 feet depth of water, 39 feet wide on bottom and 60 feet wide on sur- face of the water. Cross section of water 297 square feet.
5	5.8	3.8	6.3	4.8	6.1	4.1	182	Lock No. 8, from slackwater at Defiance.
3	No soundings	— wa	ter out	.....	.....	.....	.....	Lock No. 7.
1	No soundings	— wa	ter out	.....	.....	.....	.....	Lock No. 6.
1	No soundings	— wa	ter out	.....	.....	.....	.....	Lock No. 5 should have new gates.
Distance between places, in miles.								.....
.....	No soundings	— wa	ter out	.....	.....	.....	.....	Lock No. 4.
.....	No soundings	— wa	ter out	.....	.....	.....	.....	Lock No. 3.
.....	No soundings	— wa	ter out	.....	.....	.....	.....	Lock No. 2. Lock undergoing repairs
.....	No soundings	— wa	ter out	.....	.....	.....	.....	.....

MIAMI AND ERIE CANAL—Continued.

Distance between places, in miles.	SOUNDINGS.							LOCKS, LEVELS, AND REMARKS.
	Least depth at center.	Least depth at 13 feet from center.	Greatest depth at center.	Greatest depth at 13 feet from center.	Average depth at center.	Average depth at 13 feet from center.	Least cross section of water.	
	feet.	feet.	feet.	feet.	feet.	feet.	sqr. feet.	
1/4	6.0	5.2						Lock No. 1, outlet to slackwater at Defiance.
4	Slackwater							Lock No. 13, guard lock at lower end of slackwater.
	No soundings—ice	would not	bear					
12	5.2	4.2	6.7	5.4	7.0	4.8	194	Lock No. 12, stone. Walls tumble, and gates leak badly.
2	6.1	5.2	6.4	5.5	6.3	5.3	236	Lock No. 11, stone. Walls leak.
1/4	6.1	4.9	6.1	4.9	6.1	4.9	226	Lock No. 10, outlet to slackwater.
	Slackwater							
2	No soundings—ice	would not	bear					Lock No. 9, guard lock at lower end of slackwater.
18	No soundings—ice	would not	bear					Lock No. 8.
2	No soundings—ice	would not	bear					[soon fall.
	5.9	4.9	6.1	5.5	6.0	5.2	224	Lock No. 7, stone. Walls appear to be yielding, and may
	Abundance of water							Lock No. 6, stone. Walls leak; stone much damaged by
	Water out, for repairs							[frost.
	No soundings—water out							Lock No. 5, stone. Leak in chamber walls.
	No soundings could be taken.							Lock No. 4, stone. Walls yielding; walls below lower gates much damaged by frost.
								Lock No. 3, stone. Chamber walls leak, and walls below lower gates much shattered and weakened by frost.
								Lock No. 2, stone. Walls much shattered and leak.
								Lock No. 1, outlet lock at Toledo, stone. Walls much damaged by frost and leak; said to leak badly under miter-sills.

WABASH CANAL, TO THE STATE LINE.

Distance from place to place, in miles.								
.....	4.3	3.3	5.3	3.8	4.8	3.6	141	Wabash Canal, from the Junction to the State line, was constructed for 5 feet depth of water—26 feet wide on bottom and 43.5 wide at surface. Cross section of water 173.75 sqr. feet. Level raised 0.9 feet.
1.....	4.9	3.1	5.3	4.8	5.1	4.0	Ex. wide..	Lock No. 9 from Defiance. Level raised 0.2 feet.
4.....	4.8	3.5	5.8	4.6	5.0	4.0	Ex. wide..	Lock No. 10. Level raised 0.5 feet.
6.....	4.5	3.8	6.4	4.7	5.6	4.4	Ex. wide..	Lock No. 11. Reservoir extends from Lock No. 11 to Lock No. 12.
3.....	5.3	3.9	6.1	4.5	5.6	4.2	169	Lock No. 12.
2.....	4.4	3.1	8.0	4.5	6.0	4.0	136	Lock No. 13.
4.....								State line.

FEEDER FROM THE ST. MARY'S RESERVOIR.

0.....								Connection with the reservoir.
.....	4.0	2.7	4.5	3.5	4.2	3.1	115	Lock in good condition.
3.....	4.5	3.5	4.7	3.7	4.6	3.6	136	Connection with the canal.

FEEDER FROM THE LORAMIE RESERVOIR.

4.....	5.4	3.5	5.7	3.8	5.6	3.6	125
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COLUMBUS, OHIO, April 1st, 1872.

CLEMENT DARE,
Special Commissioner.

DIVISION NO. 1.

DEPOSITIONS TAKEN IN THE INVESTIGATION OF THE PUBLIC WORKS, UNDER RESOLUTION OF THE LEGISLATURE, FEBRUARY, 1872.

The following depositions show each question asked by Commissioner and the Lessees:

I hereby certify that the following named witnesses, whose depositions are hereto attached, were by me first duly sworn to testify "To the truth, the whole truth, and nothing but the truth, in reference to the Public Works of the State of Ohio."

In witness whereof I hereunto set my signature, officially, this 1st day of April, 1872.

P. H. DUDLEY,

Special Commissioner to Inspect the Public Works of Ohio.

CLEVELAND, February 16th and 17th, 1872.

SAMUEL LEONARD.

QUESTIONS BY COMMISSIONER.

Age? 44 years.

Residence? Cleveland.

Occupation? Boatman.

How long? 27 or 28 years.

Where? Ohio canal, part of the time; the last 15 years between Cleveland and Columbus.

What the condition of locks and canal in 1860. Poor in '59 and '60.

How often did you pass Akron Summit in '59 and '60. Eight or ten times a season.

What the tonnage of boats then. 60 tons.

Draft of water. 2 feet 10 inches to 3 feet.

What the name of your boat then. Ohio.

Have you the same now. No.

- What name now. Fred. Wood.
 What tonnage now. 70 to 75 tons.
 What draft of water now. 3 feet 3 $\frac{1}{2}$ inches to 4 inches.
 Is the Fred. Wood larger than the Ohio. No.
 Is the Fred. Wood any better constructed than the Ohio. No.
 Is the water any deeper in the canal now than in 1860. Better bot-
 tomed out; less bars to contend with.
 Are there many places on the canal, now, where it is difficult for two
 boats to pass. No, not many.
 Were there in 1860. Between Licking Summit and Roscoe there were
 many places.
 Is the water higher in the levels now than in 1860. No higher over
 miter-sills.
 Are the locks in as good repair now as then. I think better.
 Did you have much trouble boating last year. Yes, on account of
 drought.
 Do they usually have sufficient water from Akron Summit to Penin-
 sula. Yes.
 Is it as good now as in 1860. Yes.
 Do you often go south of Akron Summit. Yes, as far as Massillon, 65
 miles; Newcastle, 99 miles.
 Is that portion of canal between Akron Summit and Newcastle in as
 good condition now as in '60. Yes.
 Do you have sufficient water to do much more business. I think so.

QUESTIONS BY LESSEES.

- Is not the Akron Summit level, when there is sufficient water, better
 now than when the State had its management.
 Yes.
 Why.
 Because it has been dredged.
 How long since.
 In the last three years.
 Did you lighten your boats on Akron Summit level last fall.
 Yes, on account of drought, not from any failure of work on the part
 of Lessees.

QUESTIONS BY COMMISSIONER.

- How many tons did you carry over Akron Summit level last fall.
 In last of November, 64 tons.
 What tonnage in October.
 About 60 tons.
 What draft of water in October. 3 feet.
 Did you have less depth.
 Did not run when it was gauged less than 3 feet; laid up.
 Why. Low water.
 Did the water improve during last of the season.
 It did, and I commenced running the latter part of the season.

QUESTION BY LESSEES.

- What was the highest tonnage carried by you in 1860. 85 tons and
 some hundreds.

SAMUEL LEONARD.

CLEVELAND, February 16, 1872.

WM. HINDLEY.

QUESTIONS BY COMMISSIONER.

Age. 39 years.

Residence. Cleveland.

Occupation. Boating.

Where. On Ohio canal, between Massillon and Cleveland.

How many years have you boated.

Commenced in 1854.

What do you say of the condition of the canal in 1860, and before, compared to the present time.

Better now, except scarcity of water caused by drought.

Did the locks leak as badly in 1860, and before, as now.

I think they did; some of them worse.

What was the tonnage of your boats in 1860. Calculated 60 tons sometimes carried more.

What draft of water. About 3 feet.

What the present tonnage now for 3 feet draft.

Boats larger now, and carry 64 to 66 tons.

Do you often draw more than 3 feet water.

Sometimes 3 feet 8 inches.

Are the Lessees as prompt making repairs as the State was.

I think they are; fully as much.

Is the water any higher over the miter-sills now than previous to 1860.

Not in its ordinary stage.

Were you on the Akron Summit level last season.

Quite a number of times.

Were you there during low water.

Yes.

To what depth of water were you restricted.

First, 3 feet; then, 2 feet 6 inches; then, 2 feet 4 inches.

Did the water improve toward the latter part of the season.

It did.

Did you draw 3 feet.

Yes, the last trip was loaded 3 feet.

Did you often, in coming down from Lock 1, in Akron, find the level before you nearly dry.

Yes, when the feed was shut off at Lock 1.

What was the cause of the levels being dry.

Scarcity of water.

Was it not owing to the leakage of the locks.

Yes.

QUESTION BY LESSEES.

Has not that been always the case in dry time.

I think so.

QUESTIONS BY COMMISSIONERS.

Do you know.

Am not positive.

Were you over Akron levels the first part of the season of 1871.

Was not; was south.

QUESTION BY LESSEES.

What is the usual tonnage of boats now navigating the Ohio canal.
Seventy-five to 85 tons.

To what depth of water were you restricted in usual stage of water.

Three-and-a-half feet; we were not restricted; we usually loaded to 3½ feet, getting along without difficulty.

QUESTIONS BY COMMISSIONER.

Did you often pass Akron Summit previous to 1860.

I did, many times.

Did you ever see the levels at Akron dry previous to 1861, except during spring repairs.

I did not, from any scarcity of water.

Have you seen them dry since.

Have seen some of them nearly leaked off.

Are the lock-gates in as good condition now as previous to '61.

As good, or better.

Why are they better.

Because there are new gates in.

Were there new gates in 1871.

I am not positive.

Were there new gates in 1869.

Not positive.

In 1868.

Not positive.

Do you think new gates have been put in during the last five years.

Yes.

Is the stone-work as good now as previous to 1860.

General portion as good.

Are the wing-walls crowding in.

Some settling in, which should be repaired.

Are they as good now as previous to 1861.

General portion.

Did you see dry levels in 1871.

Some of them, when feed was shut off the latter part of the season.

Were you along the first part of the season.

No, came from the south in July.

What was the cause of the feed being shut off.

Scarcity of water on Summit level.

What caused the scarcity.

The drought.

QUESTION BY LESSEES.

Were the Akron levels leaked off, as a general thing, before 1871, and as far back as the spring of 1861.

Not frequently; always found levels full when there was common feed.

WM. HINDLEY.

J. W. EDGAR.

QUESTIONS BY COMMISSIONER.

Age. 50 years.
 Residence. Independence.
 Occupation.
 Division Superintendent, in charge of the Ohio canal between Cleveland and Peninsula.
 Employed by whom. Lessees.
 How long employed. 6 years.
 Were you employed by State.
 From 1852 to 1856, from Cleveland to Peninsula.
 What is the condition of the locks.
 Stone work crumbled, but no other perceptible difference.
 Is the crib work all good.
 No, but as good now as in 1852.
 Are the timbers under 1 foot water sound now. As ever.
 Did you have dredges in 1852. No.
 Often bottom out canal.
 Yes, required to do it.
 Have trouble at Pinery level.
 Always trouble there.
 Cause.
 Washes from side hill in the spring.
 What was the condition of aqueduct at Peninsula in 1852.
 New and safe, the second one.
 What was condition of aqueduct at Tinker's Creek in 1852.
 New and safe.
 Since lessees have had canal, has that been rebuilt.
 Yes, two years ago, in 1869.
 Was it as substantial as the other.
 Good and substantial, superior to the other, simply rebuilt wood work.
 Do they intend to re-build the one at Peninsula. Yes.
 Is the one at Peninsula safe now. No.
 Will stone work require re-building.
 A part of it.

QUESTIONS BY LESSEES.

Are materials prepared.
 Wood work and stone are being prepared.

QUESTIONS BY COMMISSIONER.

What was condition of feeder in Peninsula in 1852.
 Very bad, giving way often.
 What portion.
 The timber of the dam.
 What the condition of the outlet.
 Not very good, quite old.
 What the present condition.
 Good, and been repaired.
 When. 3 or 4 years ago, by lessees.
 What the condition of the aqueduct lock.
 As good as ever I saw it.

What the condition of feeder lock.
 Good, except tow-path wing walls crowding into canal.
 Are the gates of these two locks, in good condition.
 Good working condition.
 Does feeder furnish all necessary water.
 Yes, to 17 mile lock.
 Do you remember how many locks between 17 mile lock and feeder.
 Five locks.
 Are those in good working order.
 Yes.
 Is the feeder at 17 mile lock in good condition.
 As good as ever.
 Has it ever been repaired by lessees.
 Yes.
 Is the 17 mile lock the same as the one called No. 30, from Akron.
 Yes.
 What river furnishes water at Peninsula.
 Cuyahoga.
 What at No. 36 lock.
 The same river.
 Does that furnish enough from there to Cleveland.
 Yes, generally enough.
 How many locks from No. 36 to Cleveland.
 Seven.
 What the present condition of locks from No. 36 to Cleveland.
 Good working order.
 In six years, have any new gates been put in.
 Quite a number.
 Can you state the number.
 Ten in my division.
 Will it require new gates the coming season.
 Yes.
 How many.
 Contracted for six.
 How many new gates here in the city.
 Four. Every one as large as two common locks.
 Does the water stand higher now in the levels, than in 1852.
 No.
 Have the tumbles or waste weirs been raised since 1856.
 No.
 Do you have sufficient water from feeder in Peninsula to Cleveland.
 Most always.
 Was there scarcity in 1871.
 It took all the water the last of the season.
 Have the dredges worked in your division.
 Some above Way Lock, and further up.
 Do you bottom out during spring repairs.
 Yes.
 How many miles are under your charge.
 Twenty-four miles.
 How long is water usually drawn off for spring repairs.
 Four to six weeks.
 What number of men employed for that purpose.
 Cannot tell without referring to books. Last spring; think about eighty
 men, the usual number.

Are most of them laborers.

Yes, good mechanics repairing locks, about 20.

Do you think the canal is in as good condition now as in 1852 to 1856, when in charge of State.

Capacity greater.

What the tonnage between 1852 and 1856.

55 to 60 tons.

What now?

70 to 87 tons.

What the cause of the increased capacity.

Boats larger, bars cleaned out better and deeper.

Are boats better constructed.

I suppose so.

Is the water deeper over mitre sills now, than in 1856.

No, I think not.

QUESTIONS BY LESSEES.

Have the canals not been kept in as good repair by the lessees, as under the management of the State.

Yes, I believe it; I think better.

Do you have charge of all the men working on this division, during spring repairs.

Yes.

Are there other men employed which are not on your time rolls, during spring repairs.

Yes.

How many.

Referred to Mr. Harvey.

J. W. EDGAR.

H. HARVEY.

QUESTIONS BY COMMISSIONER.

Age. Sixty years.

Residence. Cleveland.

Occupation. Retired.

Are you acquainted with Ohio canal.

I have been, since 1848, immediately interested as lessee of water power.

Have you often passed over the line of canal.

In 1848 purchased Cleveland City Mill and water power, and have not been over canal to any great distance.

Were you acquainted with the canal in 1860.

Since 1848.

How would its condition in 1860 compare with now.

Know nothing of the condition of the locks and aqueducts.

What is the stage of water now compared with that of 1860.

Think less variable since 1860 than before.

QUESTIONS BY LESSEES.

State how the usual spring repairs have been made since, under the management of lessees.

Usually as promptly, perhaps more so, than previously, under the management of the State. On this end of the canal, in Cleveland, there have been many breaks and casualties, which have been very promptly repaired.

QUESTIONS BY COMMISSIONER.

At the time the State had charge, were there any breaks and casualties.

I think, one or two; can recollect two which were promptly repaired by the State. Would like to say that the lessees should have great credit for protecting the canal banks from the river, by piling, at great expense, in the city of Cleveland.

H. HARVEY.

ALEXANDER STEWART.

QUESTIONS BY COMMISSIONER.

Age. Fifty years.

Residence. Cleveland.

Occupation. Commission merchant between 1860 and 1870; now in oil, and all the time more or less connected with boats.

Occupation previous to 1860.

Boatman.

Where did you boat.

Through Ohio canal.

What the tonnage in 1860.

About 1852 brought two cargoes from Roscoe, sixty-six tons each, one hundred and thirty-five miles; my boat was larger than the average, and a better class of boat.

What the draft of water.

Three feet two inches.

Did you have trouble on the Summit level then.

No.

Did you ever examine the reservoirs at Akron.

No.

Have you been much over canal since 1860.

Yes.

What the tonnage of boats, in ordinary water, over Summit level.

From seventy to eighty tons.

What draft of water.

Three feet four inches to three feet six inches. A coal boat will carry more than a deck boat, being lighter.

How do you account for increase of tonnage.

Better class of boats and lighter draft than formerly.

Is the water deeper now than previous to 1860.

Yes, except where there are bars and fills.

What is the cause of the increased depth.

As a general thing, the water is higher upon the tow path; the State commenced to raise some levels.

Since the lessees' time, have they dredged and bottomed out the canal.

They have done a great deal of dredging and improved many of the levels.

Have they put in timbers to raise the waste weirs.

Not noticed them for the past two years, but previous to that the water on some levels was higher than formerly.

Have the lessees kept the canal in as good general repair as the State.

Can hardly tell; think they have not made as many permanent improvements; the locks are getting old, and need more repairs.

QUESTIONS BY LESSEES.

Did the State raise the weirs in a dry time.

Yes.

QUESTIONS BY COMMISSIONER.

Did you have trouble in 1868.

Cannot tell; have always had trouble in way of bars, washes and fills.

Did you have trouble in 1871.

Have not been through; had a boat running, which sometimes went over the Akron Summit.

Is the condition of the canal as good now as in 1860.

Could not tell; a great many detentions and accidents; do not know the cause, but suppose it was caused by the drought.

QUESTION BY LESSEES.

Did you ever know a year on the canal when there would not be difficulty in passing, or other troubles, at certain places.

No; there have always been places where two loaded boats could not pass.

A. STEWART.

JOHN McDONALD.

QUESTIONS BY COMMISSIONER.

How old.

Forty-five.

Where reside.

On the boat in Cleveland at present.

Occupation.

Boating.

What canal.

Ohio.

How many years have you boated.

Thirty.

What the tonnage of boats twelve years ago.

Fifty-five to seventy tons.

What the draft of water then.

About three feet.

What the tonnage at present.

Seventy-six to eighty-five tons.

What draft of water now.

Three and a half feet very well.

What portions of the canal do you boat over.

All of it.

Previous to 1861, did you have trouble on Portage Summit.

Some.

Did you have trouble in 1868.

Ordinary water then.

What the tonnage in 1868.

Seventy-five to eighty tons.

Trouble in 1869.

Low water on account of drought in the fall.

How in 1870.

Low water in the fall.

Cause.

Dry weather.

Did you ever examine Portage reservoirs.

No.

How was boating in 1871.

Low water all through the State, caused by drought.

Did the locks leak as much in 1860 as now.

They have been kept in ordinary repair.

Why can you carry more tonnage now than in 1860.

Water deeper.

Why water deeper.

Embankments raised in certain portions.

How many tons did you carry over Portage Summit the latter part of 1871.

Thirty-five to fifty-five tons.

Were you restricted in draft of water.

Yes.

What was the draft.

Two feet six inches to two feet four inches.

How many tons when the latter.

Thirty-five to forty tons.

Have the embankments been raised.

The general level of the water is higher now than in 1860.

Is the tow path in good condition since the lessees have had it.

Yes.

Have they kept the lock gates in as good repair as the State.

Yes.

Are you along the canal during spring repairs.

In certain places.

At Akron.

One winter in 1862.

Did they make any repairs.

Some new gates and mitre-sills were put in.

Did they grout and point up the locks.

Yes.

Did they leak more than usual last season, 1871.

No.

Are the wing walls giving in.

They are, in some places.

Are the stones of the chamber of the locks pressing in.

Yes, in some.

Does it make it difficult for boats to go in.

Some of them.

How wide are boats.

Fourteen feet three inches; general average, fourteen feet two inches, three inches, or four inches.

Do they take up the top courses of the chamber walls and relay them.

Some are relaid.

Is the quality of the stone good.

General quality is good.

Do the chamber walls leak.

Some few.

Are the locks well grouted.

Yes, the locks are kept in as good repair as possible.

Do the lessees ever relay the wing walls.

Yes.

QUESTIONS BY LESSEES.

How have they raised the water.

In some places by strips on the waste weirs, raising tow path where it was low, and deepened by dredging.

QUESTIONS BY COMMISSIONER.

How deep is the water over the mitre-sills.

Average, four feet; we can come from Massilon to C heavy a load as they can pass over the mitre-sill at Lock No. 22 at Akron. Is the crib work in as good repair as when the State owned it.

It is.

QUESTION BY LESSEES.

If it was as dry in 1860 as in 1871, what cargo could you have carried over the Summit level.

About twenty-five tons.

Was the water drawn in 1861 for spring repairs.

Think not.

JOHN McDANNELL.

JOHN KENNEDY.

QUESTIONS BY COMMISSIONER.

How old are you.

Fifty-two years.

Where reside.

Cleveland.

What occupation.

Boating during the season.

What canal.

Ohio canal.

How many years.

Twenty-three years.

What the condition of the canal then.

The locks were better then, or the majority of them. Can carry more of load now than twenty-three years ago.

Did you boat in 1861.

Yes.

What the condition of the locks in 1861.

Locks leaked a little more than twenty-three years ago.

How many tons did you carry twenty-three years ago.

From fifty-five to sixty.

What the tonnage now.

Average load, seventy-five tons; sometimes eighty-five tons, seventy-five tons being small average.

What the tonnage in 1871.

Seventy-five tons first part of the season.

What the latter part of season 1871.

Forty-eight to fifty tons.

When carrying 55 to 60 ton, what the draft of water. About 3 feet.

What the draft, carrying 75 to 85 ton.

Eighty-five ton, draft of 4 feet.

Were there obstructions in 1858.

There were bars.

Did the State clean them out.

Rather slow about it.

Do you find many bars since the works were leased.

Not many bars since the lessees had the steam dredges.

What the draft when carrying 75 to 80 tons. Three feet 8 inches to four feet.

Where do you have the most trouble.

On Summit level, south of Akron.

What is the cause.

The trouble last season, no water in the reservoir.

Why not water there.

The drouth.

How in 1870. Good; some trouble.

How in 1869. Occasional trouble.

What year dredged. Do not remember.

Is the water as deep as when owned by State.

Think the first 100 miles from Cleveland better.

Have they raised the weirs.

In some places.

Is the tow-path as well kept as when owned by State.

Yes.

Do they dredge and bottom out as much as the State.

On the sections they work, they throw out as much mud in a day as in a season by the State.

As far as navigation is concerned, do you think it is in as good condition as when run by the State.

As far as 100 miles, I think better, except some of the locks leak more.

Why do they leak.

Wear and tear of locks.

Are gates well kept.

Putting in some new ones.

CROSS-EXAMINED BY LESSEES.

What were the weirs for.

A precaution to save the water.

Is the general level of the water higher than 10 years ago.

No.

QUESTION BY COMMISSIONER.

Is the crib-work of locks in good repair.

Some need new cribbing.

JOHN KENNEDY.

Sworn to and subscribed before me,

P. H. DUDLEY,
Commissioner.

T. HARVEY.

QUESTIONS BY COMMISSIONER.

Age. Fifty years.
 Residence. Cleveland.
 Occupation. Lock tender on Ohio canal at Cleveland.
 Do you have charge of men during spring repairs.
 Yes; average 30 men, sometimes more.
 How far do you go up canal.
 Generally lock 41 (from Akron).
 Do you go often further than Peninsula.
 Not in the last 10 years.
 How long have you worked on canal.
 Since 1842 or '43.
 Were you employed by State.
 Part of the time, and partly boated; have worked for State from Cleve-
 land to Old Portage.
 Have you worked on canal since it was leased.
 Yes.
 What locks have you had charge of.
 Nos. 43 and 44, in Cleveland.
 Have any repairs been made since leased.
 A full set of gates for each.
 What year.
 Think in 1863.
 Are the locks in good working order now.
 Yes.
 Are they in as good condition as when owned by State.
 Better; when owned by State had to draw water to fill basin, locks
 leaked so badly.
 Do you know the condition of water between here and Peninsula.
 Always enough for navigation.
 Do you furnish water for mills.
 Two (2) water powers.

QUESTION BY LESSEES.

How does the efficiency and promptness of repairs by the lessees compare with those made by the State.
 More prompt and better done, in my opinion.

QUESTION BY COMMISSIONER.

Are you employed by lessees now.
 Yes.

QUESTION BY LESSEES.

In what capacity were you employed by the State, and how long.
 Partly as lock-tender; overseeing repairs for 5 years.

T. HARVEY.

PHILO CHAMBERLIN.

QUESTIONS BY LESSEES.

Age. 61 years.

What is your place of residence.

My residence is Cleveland.

Occupation.

I have been for the last 20 years engaged in transportation business upon the lakes and Ohio canal; upon the Ohio canal since 1834.

How long have you known and what business connections have you had with the Ohio canal.

I have known the Ohio canal for about 37 years; I have been most of the time interested in transportation on the Ohio canal by canal boats, a portion of that time I was deputy collector of tolls in Akron, from about 1836 to 1840, I have been directly and indirectly interested in navigation upon the Ohio canal since 1840 to the present time.

State to what extent you have been interested in canal navigation during the time mentioned by you.

During a portion of the time I have been interested in but few boats, say from 1 to 5; about 1850, I was interested in running 32 boats on the Ohio and Pennsylvania and Ohio canals, the boats upon the Pennsylvania and Ohio canal all ran upon Ohio canal between Akron and Cleveland.

State to what extent you have been interested in the navigation of the Ohio canal since June 1st, 1861.

Since June 1st, 1861, I have been interested not to exceed 5 or 6 boats at any one time.

State whether the Ohio canal has been kept and maintained in a condition of equal public utility by the Lessees as at the time of the execution of the lease of the same.

I must say I think it has.

State how and to what extent the supply of water from Akron Summit north to Peninsula has been diminished since the public works passed into the hands of the Lessees.

To answer that question understandingly, I must go back in the history of the canal, to a period prior to 1840. Previous to 1840, the supply of water for the canal between Akron and Peninsula was drawn largely from the Summit. In 1840, the Pennsylvania and Ohio canal was completed and connected with the Ohio canal. The State had taken a large interest in the Pennsylvania and Ohio canal, with a view of making it a feeder to the Ohio canal, because it was self evident that the supply of water on the summit, from all available sources, would soon be inadequate for the prospective increase of navigation. After the introduction of the waters of the Pennsylvania and Ohio canal into the Ohio canal at Akron, the quantity necessary to be drawn from summit level northward, was materially diminished in consequence of the supply furnished by the waters of the Pennsylvania and Ohio canal, to the levels of the Ohio canal north of Akron. This water of the Pennsylvania and Ohio canal was flowing into the Ohio canal, and a large business to the Ohio canal was derived from the Pennsylvania and Ohio canal, at the time the Lessees took possession of the Ohio canal. Since the Lessees have been in possession of the Ohio canal, a portion of the Pennsylvania and Ohio canal has been obstructed by mob violence and filled up, which has cut off the supply of water, and destroyed a large portion of the business

that was tributary to the Ohio canal at the time they took possession. This has so diminished the supply of water from the Pennsylvania and Ohio canal to the Ohio canal at Akron, as to involve the necessity of drawing more largely from the summit, to supply the levels, for fourteen miles, between Akron and Peninsula, and the drawing of so large a quantity of water from the summit northward, particularly in a dry time, must of necessity have greatly diminished the quantity to be drawn southward, and would tend to exhaust the supply on the summit.

Could the reservoirs at and about Akron, belonging to the Ohio canal, have been filled in the winters of 1870-'71, and in spring and summer of 1871, by any agency within the range of possibilities, under the command of the Lessees, and state your means of knowledge.

I think they could not, I know that the reservoirs belonging to the Akron Hydraulic Company were not filled and could not be filled, on account of the deficiency of rain and dry weather.

State how far back in the history of the Ohio canal, the short levels at Akron were drawn down by lockage in times of drouth.

Prior to the introduction of the water of the Pennsylvania and Ohio canal into the Ohio canal, the levels were frequently drawn down, afterwards and until the supply of water from the Pennsylvania and Ohio canal was cut off, the drawing down of the levels was less frequent, since cutting off the supply from the Pennsylvania and Ohio canal; particularly in dry time, those levels at Akron have been more frequently drawn down.

Are the reservoirs about the Akron summit of sufficient capacity to furnish the canal with a sufficient supply of water during periods of drouth.

I do not think they are, without restoring the waters of the Pennsylvania and Ohio canal, or obtaining a commensurate supply for the levels north of Akron, from some other source than the summit of the Ohio canal.

State where the supply of the waters furnished by the Pennsylvania and Ohio canal was derived.

The supply of water was derived from the Cuyahoga river, and Break-neck Creek, in Portage county; the flow of water was regulated and the supply made uniform, in the dry season, by extensive reservoirs in Portage county. I think the reservoirs in Portage county, might have been filled last spring, if the Pennsylvania and Ohio canal had been in operation, at any rate I am so informed by practical and accomplished engineers.

If the supply of water had been continued from the Pennsylvania and Ohio canal, would there have been sufficient water for efficient navigation on the Ohio canal from Akron to Cleveland, during the season of 1871.

In my opinion, the supply would have been amply sufficient, with proper economy in the use of the water on the summit level.

QUESTIONS BY COMMISSIONERS.

Have you any interest in water power furnished by Ohio canal at any point.

I have none to my knowledge.

How do you form your opinion as to the equal public utility of the Ohio canal now and previous to 1861.

My opinion of the public utility of a canal is based upon its capacity

and upon the volume of business tributary to it. The capacity of the Ohio canal, has been increased since it came into the hands of the lessees. The amount of business, particularly in the transportation of coal has been largely increased, in the same period, and is likely to be increased still further, to an almost incalculable extent, if a sufficient supply of water can be obtained for the prospective increase of navigation.

This estimate has particular reference to that part of the Ohio canal north of Licking Summit, 194 miles south of Cleveland.

How has the capacity been increased by the lessees.

I do not say that the lessees have increased the supply of water upon the Ohio canal, but I believe that they have enlarged the volume of the Ohio canal, so as to give it a greater draft or depth of water, which enabled boats of the same relative capacity to carry a larger tonnage thereon.

How have they enlarged the volume of the canal.

I consider that in general they have enlarged the capacity of the Ohio canal, by bottoming out places that were higher than the mitre sills, by raising the banks in places and thereby giving a greater depth of water on the canal.

Does the water stand any higher over the mitre sills now than previous to 1861.

I do not know that fact, I am under the impression that it does, from the fact that boats coming into Cleveland, of similar model bring larger loads, than they did in 1861.

Have the embankments been raised since 1861.

I think they have in places to a greater or less extent.

Did the Lessees lease any part of the Pennsylvania and Ohio canal.

I have seen the lease of the Public Works and in that, I consider that the rights of the State of Ohio, to the waters flowing from the Pennsylvania and Ohio canal, and its reservoirs and feeders, as a feeder to the Ohio canal, are thereby conveyed to the Lessees, and also that the business derived from the Pennsylvania and Ohio canal to the Ohio canal is understood to be a part of the sources of revenue to the Ohio canal.

Do you know it to be a fact that the Pennsylvania and Ohio canal was ever lawfully considered, a feeder to the Ohio canal.

Yes, it was distinctly understood, to be one of the main objects in chartering the Pennsylvania and Ohio Canal Company, that the canal they were to build would be a feeder to the Ohio canal forever, (the charter being perpetual) and in order, to accomplish this purpose, as it was difficult to obtain sufficient stock subscriptions to build the canal, the State of Ohio took about one-third of the stock, and thereby became interested in its construction.

At what point on the Ohio canal did the water of the Pennsylvania and Ohio canal enter the Ohio canal at the time of the lease.

The waters of the Pennsylvania and Ohio canal at the time stated entered the Ohio canal at two points, one between Locks Nos. 5 and 6, in Akron, and another, at Lock No. 16. It was arranged at the time of the introduction of the waters of the Pennsylvania and Ohio canal into the Ohio canal by agreement, that no more water should be taken in at the upper connection, than would be equal to the quantity drawn through Lock 1, on the Pennsylvania and Ohio canal, and that the remainder should be taken in at or near Lock No. 16.

At the time of chartering the Pennsylvania and Ohio Company, provision was originally made in the charter, that the connection between the two canals should be upon the summit level at Akron, but it was

almost impracticable, and would involve a very large additional expense, in which the State was interested to about the amount of one-third, and by a calculation made by Leander Ransom, the then Commissiner of the Board of Public Works, and S. Dodge the Engineer of the Pennsylvania and Ohio canal, that the water from the Pennsylvania and Ohio canal was not required upon the summit, as a larger volume than it afforded would be required to replenish the levels upon the Ohio canal from the foot of Lock 16 to Peninsula, a distance of about 14 miles, and if the water was introduced upon the summit, it would then have to be drawn therefrom, in addition to the requirements of lockage, to supply the levels below Lock 16, consequently an act of the Legislature, was passed authorizing the connection as it stood at the time the lessees took possession of the Ohio canal.

Did any water enter the Ohio canal from the Pennsylvania and Ohio canal at the dates of the lease between Locks 5 and 6 at Akron.

I do not know, I think it did not.

Is there any feeder to the Ohio canal at Lock 16.

There is a feeder there, which originally and until the water of the Pennsylvania and Ohio canal was cut off, conveyed all the water of the Pennsylvania and Ohio canal into the Ohio canal. I believe the same feeder is there now, which conveys into the Ohio canal what there is left of the waters of the Pennsylvania and Ohio canal, and also what leaks through the banks of the Pennsylvania and Ohio canal into the little Cuyahoga river, and whatever there may be left in the little Cuyahoga river. There is only one division of the Pennsylvania and Ohio canal now in operation, that is between Akron and Middlebury, and its supply of water is derived entirely from the waters belonging to the Akron Hydraulic Company, and their reservoirs. If for any cause during a dry season the water should be shut off or cease to flow from the reservoirs of the Akron Hydraulic Company, a very large increase of water would have to be drawn from the summit level to supply the levels between Lock No. 16 and Peninsula.

Where is Lock No. 1, on the Pennsylvania and Ohio canal.

Near the junction of Mill and Main streets, Akron.

Are you thoroughly acquainted with reservoirs at or near Akron, of the Ohio canal.

I am not thoroughly acquainted, I have been around them, taken a general survey of them, but have never participated in a critical engineer's survey.

Do you know their water shed, and extent of their supplies.

No, only as a general estimate.

Do you know any thing about the management of the reservoirs of the Ohio canal in the winter of 1870 and spring of 1871.

I do not.

QUESTION BY LESSEES.

State whether you ever had any interest whatever directly or indirectly in the lease of the Public Works.

I have none, and never had.

PHILO CHAMBERLIN.

ARTHUR HUGHES.

Age. 63 years.

Residence. Cleveland.

Occupation. Commercial and transportation business, the most of my business life.

QUESTIONS BY THE LESSEES.

How long and intimately have you been acquainted with the Public Works of the State.

From 1842 to the fall of 1868. During that time, the firm of Hubby, Hughes and Co., and other firms in which I was connected, were running a large number of boats on the Ohio canal up to about 1864. Our canal business required me to travel the Ohio canal and its tributaries from two to four months of each year. From 1864 up to 1868 I was passing up and down the Ohio canal frequently, and had an opportunity of observing the condition of the Ohio canal.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by lessees as at the time of execution of lease of the same.

From my knowledge of the Ohio canal and its tributaries from 1861 up to 1868, I should think the canals were kept in quite as good, if not better, repair than they were under the supervision of the State. Since the fall of 1868 have not been intimately acquainted with the Ohio canal. In my statement I wish to be understood that the Ohio canal under the direction of the lessees have afforded facilities for transportation of property, far in advance of the facilities furnished under the supervision of State officials, previous to 1861.

State whether the lessees have been prompt in making needed repairs or not, and how this compares with the action of the State when it had the management of the Public Works.

So far as I have been acquainted, I think the lessees have been more prompt in making repairs and facilitating transportation on the Ohio canal than was furnished under the supervision of the State.

State the average tonnage of boats navigating Ohio canal at and before June 1, 1861, and the average percentage of increase of tonnage since that time.

The average tonnage previous to 1861 was about 60 tons, the increase since that time will range along from 8 to 20 tons per boat.

QUESTIONS BY COMMISSIONER.

Did you often pass over line of Ohio canal previous to 1861.

Yes, frequently.

Did you have means of knowing the condition of the Ohio canal, then.

Yes, as I was interested in not having boats detained.

Were the locks in good condition.

As a general thing the locks were not.

What was the trouble with the locks.

Had not been kept repaired.

Why were they not kept in repair.

Because the State failed to furnish sufficient quantity of money to keep them up.

For how many years previous to 1861.

About 4 or 5 years.

Did the tolls fail to keep the Ohio canal in repair.

I was so informed by the board of public works and other state officials; do not know from personal knowledge.

Was the Ohio canal in good condition previous to 1852.

Not in perfect condition, but better than between 1852 and 1861.

Since 1861 have the lessees generally put the Ohio canal in good condition.

As a general thing they have.

Do you think the lessees have fully complied with the terms of the lease.

Do not know.

How do you account for the increase of tonnage since 1861.

Previous to 1861 canal boats were built with a view to speed, being sharp both forward and aft. As new boats were built they were constructed with full bows and sterns for the purpose of increasing the freight tonnage, and think the lessees furnished more water than by the state.

How have they furnished more water.

By preventing leaks and wastes, and dredging out and deepening the canal.

Is the draft of water with this increase of tonnage greater now than in 1861.

I think boats would draw four inches more of water now than in 1861.

Was the condition of the canal previous to 1861 such that you could carry the increased tonnage if the boats had been constructed as now.

I think not on the Ohio canal between Roscoe and Cleveland.

QUESTIONS BY LESSEES.

Do you know anything about the stipulations of the lease under which the lessees hold the public works.

I do not.

How far back in the history of the Ohio canal have boatmen had trouble for want of water.

Ever since my first acquaintance, in 1842.

State whether you ever had any interest whatever, directly or indirectly, in the lease of the public works.

I never had.

A. HUGHES.

PENINSULA, February 19, 1872.

R. H. MORGAN.

QUESTIONS BY COMMISSIONER.

Age. 32 years.

Residence. Peninsula.

Occupation. Boatman.

How many years have you boated.

More or less for sixteen years.

Were you on the canal in 1861.
 Was in the army.
 Did you boat in 1860.
 Yes.
 Did you boat in 1862.
 Was in the army from '61 to '65; discharged in August, 1865.
 Between what points did you boat in 1860.
 Clear through from Cleveland to Portsmouth.
 What was the condition of the canal in the season of 1860.
 As far as I can remember it was good; do not remember of any trouble.
 Was that a dry season.
 Don't remember.
 Were the locks in good condition in 1861.
 We had no trouble, one man could open the gates.
 Have you boated during the boating seasons from August '65 to '71.
 Most of the time.
 Previous to '61 did you have trouble in two boats passing.
 Not at this end of the canal; some trouble on the lower portion, at the Circleville level.
 Did you have sufficient water from the Akron Summit level to Cleveland.
 We did.
 In any of the seasons previous to '61, did you have trouble with low water from the Akron Summit north.
 Not that I can recollect.
 Have you had trouble since August, '65.
 Yes.
 What seasons.
 If I remember right, four years ago last fall, we were bothered.
 On what what points did you have trouble.
 On Summit and Wolf creek levels.
 Did you have trouble with the levels this side of the Summit.
 Some, but these were the principal levels.
 Any season since four years ago.
 Last season or 1871.
 Where did you have the trouble.
 Pretty much all the was from Wolf creek lock to Cleveland.
 Where is Wolf creek lock.
 The southern end of the Akron Summit level.
 What was the cause of the cause of the trouble.
 Scarcity of water.
 Do you know whether the canal at the Summit level, and Wolf creek lock has been dredged out.
 I has been dredged.
 What year or years.
 I think 3 years ago in '68 and '69, a part of it, and in '71 they finished the balance.
 Do you know how deep the water is over the mitre sills at the two locks at Summit level.
 I do not.
 Was it kept properly dredged out, or was there a scarcity of water.
 Scarcity of water.
 On what portion of the canal have you principally boated since '65.
 From Cleveland to Massillon.

On this portion of the canal have they kept the tow path in good condition.

Not very.

Most of the way from Massillon to Cleveland which way does the tow path drain.

Some from and some into the canal, not much attention paid to its drainage.

From Massillon to Cleveland have the levels been kept bottomed and dredged out so that two boats can pass with facility.

No.

Have they made places in the levels for boats to pass.

Yes.

How do they do if you do not meet at those points.

One or the other stops.

Is it a general thing.

From Cleveland so 17 Mile Lock no trouble if water is proper height; from there to Lock 21 there is a great deal of trouble.

Can you specify any levels.

From Peninsula Aqueduct and Deep Lock.

Is there much business done on this level.

A great deal; hardly a day in the summer that boats do not load.

Do they ever bottom out this level.

Not very much for a number of years.

Can you open all the locks between Cleveland and Massillon with an ordinary crew.

Can not; it takes all the crew and sometimes the team.

Are there many of those locks.

Sometimes one and another, culverts out of repairs, slides gone. Red lock bothered very much last summer, or in 1871.

Are they prompt in making necessary repairs to the locks.

One of the paddles was gone from Red lock nearly all summer; the Aqueduct Peninsula lock had a paddle a month and a half, the first of the season, since then it is gone; none in now.

Do you know whether the water is any deeper over the mitre sills now than in 1860.

Do not.

Have they raised the timbers on the waste weirs and tumbles.

They have.

Can you specify any levels.

Tow-path on Peninsula Feeder level.

Any other.

Below Red lock the waste weir.

Any other.

That is all I know of.

What was the tonnage of your boats in 1860.

Seventy to seventy-five tons.

What was the tonnage of your boat last season or 1871.

About the same during the first of the season of 1871.

The forepart of the season did you see the Akron levels dry before you.

Very often run down a foot or so.

What was the cause.

Because the locks leaked.

Were you ever detained because the levels were down.

Very often.

Do you know the cause of the low water last summer.
 I do not.
 Where is the first feeder north of the Summit level.
 At the foot of Lock No. 16.
 Where is the second.
 Below Lock 21.
 Where is the third.
 At Peninsula.
 Did you ever see water wasting over the feeder-dam at Lock No. 16.
 Did not take particular notice.
 Do you think the canal in as good general repair as in 1870.
 No.
 Do the locks leak more.
 I think they do.
 Are the gates and paddles in as good condition now as in 1860.
 I think not.
 Are you often detained by breakages of locks.
 Often, several times last summer.
 Are the lessees prompt in making repairs.
 If they are there and can, they do so.
 How do they bottom out the canal.
 With the dredge is all I have seen them do for the last few years.
 Has the dredge been north of Summit level.
 To make one or two meeting places on Yellow creek level.
 Any other points.
 Not that I know of.

QUESTIONS BY LESSEES.

When was this portion of the Ohio canal, between Massillon and Cleveland, bottomed out by the state before it went into the hands of the lessees.

I do not know from personal observation, only this part of the canal at Peninsula, when every spring, under the management of the state, that I can remember they had a gang of men with wheelbarrows to bottom it out when the water was drawn off.

What was the maximum draft of the boats you ran since 1865.

Three feet four inches.

How many tons burden at a draft of 3 feet 4 inches.

About 75 tons.

What was the average tonnage of the boats navigating this part of the canal since 1865, and what was the average draft of water when laden to their full capacity.

About 75 tons to 3 feet 4 inches, I think, would be the average.

What was the average draft of water of boats laden to the capacity of 85 tons.

Probably 3 feet 7 or 8 inches.

What has been the uniform depth of water of that part of the Ohio canal since 1865.

Biggest part of the time could carry full loads, about 75 tons, except in low water.

How much of the time since 1865, has this part of the canal been lower in water than 3 feet.

In the fall of 1867, was gauged to 3 feet for two or three weeks, and

had trouble on summit level, and in 1871, bothered about three months, and was gauged to 3 feet and could not go with that a part of the time.

How much of this time were you gauged to less than 3 feet.

Don't remember exactly, probably near half of the time.

Was not this occasioned by drouth.

Scarcity of water.

What occasioned the scarcity of water.

It was a very dry season.

Did not the towing path furnish good facilities for purposes of navigation since 1865.

We could get along with that part of it very well.

How often were boats on this part of the canal detained by reason of the locks being out of repair since 1865, and what was the cause of such detention, if any.

We were stopped quite often at Peninsula lock, by reason of it caving in every winter; they hired men to pick off the face of the stone; was detained once last season at Red Lock, there was a chunk behind the gate, which knocked a hole through it when it was shut, and at lock 6, in Akron, the gates of which fell down.

QUESTIONS BY COMMISSIONER.

Do you think the scarcity of water last season was owing to the dry weather.

Do not know anything to the contrary.

Was the water properly cared for before.

Do not know.

Can you be positive that the low water was owing to the dry weather.

Can not.

Are not the walls in a majority of the locks pressing in.

I was only bothered with two.

QUESTIONS BY LESSEES.

What is the breadth of your boat.

I think 14 feet 3 inches, from outside to outside.

Do you know positively whether they have raised the waste weirs and tumbles by timbers and increased the depth previous to 1860.

I only know of the two I have spoken of.

Do you know whether they have raised the level of the water or not.

I do not.

R. H. MORGAN.

CHARLES BENTON.

QUESTIONS BY COMMISSIONERS.

Age. 42 years.

Occupation. Boat builder.

Residence. Peninsula.

Have you ever boated on the Ohio canal.

Yes.

At what time.

I quit in 1859.

Did you boat on the entire Ohio canal, or what part.

From Clinton to Cleveland.

How many years prior to 1859, had you boated.

Eight years.

Did you have any trouble from leakage of locks, &c.

Occasionally, but not much.

Were the locks and other structures in good condition at that time.

Yes, generally.

Could one man usually open the gates at that time.

Yes, generally, the last of my boating, 17 and 14 mile locks one man could not open the gates.

Were they soon repaired.

Do not know when they were repaired; were in that condition when I left canal.

Did you ever hitch horses to open gates.

Yes.

Was that of general occurrence.

No, I think not.

Were you ever troubled with scarcity of water during your time of boating.

Do not recollect that I was.

Was there any difficulty in two boats passing on any of the levels.

Not in many places.

Was the tow path kept in good condition.

Yes, generally.

Did the water drain from the tow path in or out of the canal.

Some places one way and some the other.

As a general thing was not the bank kept higher than the outside.

I think so.

During the spring was the canal bottomed out.

Yes.

Can you state the general depth of water at that time.

Used to load at 3 feet 2 to 3 inches, at least I did.

What was the tonnage of your boat.

Seventy-five tons.

What the width.

Fourteen feet two and a half inches.

Are not the boats differently constructed now from them.

About the same.

What is the general width of boats at this time.

About 14 feet 2 inches.

Is that the width of most builders.

It is.

Do you know any thing of the condition of the canal.

Do not know as much now as when I boated, but went from here in 1870 to Dresden. I went as far as the Public Works extend to the Ohio river.

What do you say of the condition of the canal from Pennisula to Dresden.

I had no trouble or saw any.

Did you think the locks were in as good condition as when you boated in 1859.

I had no trouble in meeting boats, had no trouble in lockage, my boat was not as wide as the average; saw no difference in the locks.

When you were boating in 1859 and previous, did you often see the levels at Akron dry.

Not often, though sometimes the case in short levels.

Have the lessees increased the depth of water over the mitre sills.

Do not know.

What is the usual depth over mitre sills.

Four feet.

In 1859 was the condition of the canal such that you could have drawn more than 3 feet 4 inches.

I do not know that a boat could go through with over 3 feet 4 inches at the railroad bridge at Akron Summit, have known boats to stick at 3 feet.

Is there a little stream there to make a bar.

I think not, but washing in from the tow path.

Were not the boats made then for greater speed, instead of heavy loads.

About the same as now.

Were the boats made sharper then than now.

Coal boats were not.

Was the cribbing of the locks when you boated generally good.

Yes.

Did you find it so in the fall of 1870.

Do not recollect.

QUESTIONS BY LESSEES.

What repairs were put on this part of the canal in the spring of 1861 by State.

Do not recollect.

Was not the water kept in the canal during the whole of that spring.

There was one spring that the water was not drawn off, but do not recollect.

What draft of water should a boat average carrying 85 tons.

About 3 feet 5 to 6 inches should think.

QUESTION BY COMMISSIONERS.

Would not some boats carrying 85 tons vary in the draft.

Yes.

QUESTIONS BY LESSEES.

What was the width of the boat you took to Dresden.

Outside the fender walls 14 feet 1 inch, and the hull of the boat 13 feet, usual width of the hull of average coal boats being 13 feet 10 inches.

CHARLES BENTON.

A. D. HATCH.

QUESTIONS BY COMMISSIONERS.

Age. 51 years.

Occupation. Boatman.

Residence. Peninsula.

How long and where have you boated and when.

Since 1865 boated steadily, previous to that off and on.

Did you boat in 1860.

No.

In 1859.

No, I boated in 1857 and 1858.

What was the condition of the canal at the time, locks, &c.

The locks were not in the best condition, some complaint, but in passable condition.

Did you often pass Summit level in 1857 and 1858.

Boated some from Chippewa.

Were you troubled in passing boats on some levels.

There was one season I had trouble in passing Summit level, in the dry season of 1858 I think.

Did the State at that time keep the canal bottomed out.

There was a bad place between Waterloo and railroad bridge.

Were the locks in as good condition when you commenced in 1865 as they were in 1858 and 1859.

I think so except the wear and tear; the cribbing was mostly visible and in sound condition.

Was the cribbing visible in 1871.

Some was and some not.

Do you know anything of boats being sunk at Lock 1.

Do not know anything positive.

What caused the break in Cleveland in 1871.

I do not know, was between Peninsula and Akron.

Did you ever know any of the locks to leak through the planking, so that the boatmen had to take boards from their boats to prevent leaks.

The lower gate of one lock had a broken paddle I took a board and fixed it.

At what lock.

Lock below Boston called Wallace Lock.

Did you ever see or use any horses to open lock gates since 1867.

Frequently.

Is that of common occurrence.

Some of the locks it became necessary to do so often through the season.

Is it because they are out of repair.

Yes.

Do you know of any boats sinking because the bumping beams get loose and float around.

One instance, Johnny Cake Lock.

Have the Lessees made passing places.

I think two or three, on Yellow Creek level, am not positive.

Was not the canal originally wide enough to pass two loaded boats.

Yes, the first of my boating career we never had trouble.

What is the cause of the canal getting narrow at those points.

Filling in at the sides is all I know as a cause.

If they were kept bottomed and cleaned out could boats pass.

I should think so if they were not overloaded.

Have the Lessees bottomed out from Massillon to Cleveland as much as the State.

I should think not, not so much mud taken out of the bottom of the canal.

Do you know whether they, the Lessees, have raised the waste weirs and tumbles.

Do not.

Do you know anything of the water mark 20 years ago, compared to the present.

I do not think there is as much water now as then.

How much water should there be for proper navigation, for a boat drawing 3 feet.

Three feet 3 inches; I want 3 inches more than draft.

You do not know whether they have raised the weirs and tumbles.

I do not.

Is the capacity of the canal as great now as in 1857-58.

No.

Have they kept the tow path so the washings go away instead of in the canal.

I don't think they have; it shelves both ways.

Are they as particular in that respect as the State.

Never saw much difference.

In low water last summer where did you have the most trouble.

On the Summit before the dredge went through.

What other trouble.

Through Lock 1 to Lock 5, a scarcity of water.

Did you have much trouble below Lock 16 to Peninsula.

Got along well.

QUESTIONS BY LESSEES.

Could no boats of not more than 3 feet draft pass at all ordinary stages of water since 1861.

I think not.

State when and where, and for what length of time such boats could not pass.

I think that there was as much as two months on Yellow Creek level and Portage level that boats could not pass.

When.

During the extreme dry weather in 1871; there might be some two or three places on Yellow Creek level when they could not pass. One would have to hold up while the other passed.

Excepting the extreme dry weather mentioned by you, could not boats drawing not more than 3 feet of water navigate the Ohio canal since 1861 successfully.

Well, if the levels should happen to be full and not drawing over three feet, I think they might.

What was the tonnage of the boats navigated by you in 1857 and 1858.

I think they carried about 62 or 68 tons.

What the tonnage of boats navigated by you since 1865 to the present time.

About 70 to 73 to 74 tons.

What have you been carrying since 1865. Coal.

What is the largest load you ever carried into Cleveland.

About 78 tons.

How many feet of water did your boat draw when it carried from 72 to 78 tons.

Three feet 6 inches, in the fall of 1870.

State the draft of your boats when you carried 62 to 68 tons.

About 3 feet and 3 inches; a boat now, with the same draft, will carry about 6 to 8 tons more on account of the build of the boat.

Did you not experience serious difficulty in navigating the canal from want of water in 1857 to 1858.

Had some trouble.

Did that result from drouth.

I think so.

How do you know that the canals have not been bottomed out as well by the lessees as by the State.

By personal observation.

To what extent have they failed to bottom them out as well as the State.

The State would send on 10 or 15 workmen, and the lessees would send on 4 or 5.

A. D. HATCH.

JORGEN PETERSON.

QUESTIONS BY COMMISSIONER.

Age. 49 years.

Residence. Peninsula.

Occupation. Boatman and painter.

Where have you boated.

Principally from Massillon to Cleveland; occasionally down south to Chillicothe, Lancaster and Columbus.

How long have you boated.

Eight seasons.

Did you boat when the State had charge of the canals.

I did not.

Did you see any sunken boat at Lock 1.

I was not there.

Did you often see the levels dry at Akron.

Quite often, run down.

During the fore part or latter part of the season.

The latter part, the fore part tolerable good.

What was the cause of their running off.

Partly want of water and partly leakage of locks.

Did you ever know of any of the boatmen putting boards on the planking.

I did not. I knew of their putting them over the slides when broken.

Did you often have to use horses to open the gates of the locks.

Yes, occasionally.

What was the reason.

Leakage in the gates, paddle out of order.

Are the paddles and culverts of the locks from Massillon to Cleveland in good condition.

The culverts are often out of order, the paddles do not get out of order as much as the culverts.

Do most of the locks from Massillon to Cleveland leak badly.

Some of them do, the Peninsula Aqueduct and Feder Locks leak the most, these last two locks getting worse from year to year.

Have you known any boats stove in by hitting the cribbing which was out of sight.

Heard so but did not see it.

Were you ever detained by breakage of locks.

Yes.

When and where.

In 1871 was detained the 23d of July from 5 P. M. till 6 A. M. the 29th.

Why were you detained.

In consequence of two lock gates doubling over at Lock 6.

Any other detentions.

The 22d of August at Peninsula, at 4 A. M., until 4 A. M. the 24th, by lower gates of deep lock.

Any other detentions.

Much of the detention of the Portage and Yellow Creek levels was caused by grass, which grows to the top of the canal.

Do you have any difficulty in passing other boats on any of the levels.

Principally from feeder-lock at Peninsula, to Lock 21; below that not much trouble in meeting boats.

Is the canal kept bottomed and dredged out between Massillon and Cleveland.

I do not know about the canal beyond the Summit Level south; the Summit Level has been dredged; this side not bottomed out much for the last 5 or 6 years, that is from Akron to Peninsula.

Do you have trouble from Peninsula to Cleveland.

No; that is in pretty good order.

In 1871 where were you troubled by low water.

Principally Summit Level.

Did you have much trouble north of the Summit.

If loaded out, yes, in meeting coal boats; if light, could pass.

How long have you been so troubled.

For the last 5 years.

How do you do when you have trouble in passing.

Pull and try, or haul back; I got a capstan to help me.

Have they made places in any of the levels to pass.

Two on Yellow Creek level, and one on the Peninsula level, but too short.

Do you often find boats loading on this level.

Yes; ties, wood.

Do you have trouble with them.

Yes, except at the Mills, which have made a place for the boats.

Do you know anything of the condition of the Eight-Mile Lock.

It was not in good condition.

Any trouble with Red, Kittlewell and Peninsula Locks.

Red Lock was in bad condition most of the season; the Kittlewell leaked some, but worked tolerably well; the Peninsula Lock was in poor condition.

Did the locks from 1 to 21 leak more last year than usual.

Locks 10 and 6 leaked badly.

Did they grout and point them up last spring.

Yes, more pointing was done last spring than I have known for some time.

Do you know the cause of the low water at the Akron levels.

Principally the drouth and leakage of the locks.

Were the locks and other structures in as good repair in 1871 as when you first commenced to boat eight years ago.

The wear and tear of locks; gates are getting rotten.

If sufficient water on the Summit, did you have enough in other places.

Yes, except at the Peninsula level, caused by aqueduct leaking, which detained us.

Do they generally have careful men to take charge of the work.
Cannot say whether they use proper judgment.

QUESTIONS BY LESSEES.

What draft of water did the boats draw when they were hindered in passing each other.

When I load lumber out of Cleveland, I very seldom load lower than 2 feet 10 inches; coal boats load from 3 feet 3 inches to 3 feet 4 inches.

What is the depth of water usually drawn by boats navigating this end of the canal when loaded down to their full capacity.

I seldom load over 3 feet 2 inches, sometimes 3 feet 4 inches. I generally load light, so as to have as little trouble as possible. There are boats which load 3 feet 6 inches, but they only drag along; it needs a good deal of water to float a boat well at 3 feet 3 inches.

How much water do boats ordinarily draw when laden at 85 tons.

Not less than 3 feet 6 inches.

What time within the last 8 years have the canals been inadequate to furnish successful navigation for boats drawing not more than 3 feet of water.

About 2 months that season. Three years ago we had the same pull of low water. The water commenced failing the 31st of July, 1871; only loaded 71 tons 13 cwt.; the next was 9th of August, loaded 70 tons and 6 cwt.; 19th of August, 66 tons 1 cwt.; 18th of September, 72 tons 4 cwt.; 24th of August, about 70 tons; 5th of October reached Lock 16, and the 8th succeeded in going through Akron levels with an empty boat; the 10th, 11th, 12th, 13th, 14th, 15th, 16th 17th, 18th, loaded with 54 ton and 19 cwt. I was 8 days getting over Summit level; I was drawing 2 feet 6 inches, and had to lighten up 2 inches; unloaded in Cleveland and came home in disgust.

How long were you limited to 3 feet of water in 1868.

About 6 weeks, as nearly as I can recollect.

Why were you limited to 3 feet of water in 1868 and 1871.

Scarcity of water.

Have you not had less water since the closing up the P. and O. canal from Akron to Kent.

I think we have.

Were not repairs made in the spring of 1871 through Boston township, on the Ohio canal.

Yes.

If there had been as severe a drouth when you began boating on the Ohio canal as in 1871, would not the successful navigation of said canal have been seriously interrupted.

It would.

With the same amount of lockage, would it have been possible to have passed the Akron Summit with boats drawing 3 feet of water.

It would not.

QUESTIONS BY COMMISSONER.

Where did the water of the P. and O. canal enter the Ohio canal.

Below Lock 16, north of Akron.

Have you not seen the water run over the feeder-dam at Lock No 16.

I have, which we considered a good sign.

Where is the next feeder.

Below Lock No. 21.

Does the waste water from No. 16 come in at Lock No. 21.

I do not know.

Do they take in all the feed they can at Lock No. 16.

They do.

Is that a good dam at Lock No. 16.

It is.

Do you know anything of the dam at Lock No. 21.

I do not.

If the lock gates were in good condition from Lock 1 to 16 so that these locks would retain water, would you need more feed than what you have now for successful navigation.

No, for when we get below Lock 16, we go along pretty well.

Do you know whether they have less feed then than before the Pennsylvania and Ohio canal was closed up.

I could not say and do not remember.

Do you know that it requires any more from the summit to supply the levels than before the Pennsylvania and Ohio canal was shut up.

I do not know.

Do you know anything about the reservoirs at Akron Summit.

I do not.

When there was connection between the two canals, did you lock up into the Ohio canal.

I did lock up.

Did that take water from the summit level.

It did.

Where does that water enter the Ohio canal.

It goes through the mill race to supply the mills at Akron and enters below Lock No. 16.

Do you know whether they draw water from the Ohio canal into the Pennsylvania and Ohio canal.

I do not.

QUESTION BY LESSEES.

Is there any leakage from any of the locks from 1 to 21, but is returned to the levels below 21.

None that I know of.

QUESTIONS BY COMMISSIONER.

Do you know whether any runs over the waste weir of feeder dam at Lock 21.

If there is more than they want in the canal, they open a flood-gate and let it into the river.

Do they take proper care of all the feeders and reservoirs.

I do not know.

JORGEN PETERSEN

JORGEN PETERSEN RECALLED.

State what tonnage your boat drew at 3 feet water.

Between 65 and 66 tons.

How did increased tonnage effect the draft of water.

Two to three ton to the inch on the last foot.

How much water did your boat draw, light.

Neighborhood of 11 inches.

How did the model of your boat compare with others carrying coal.

A good deal built on the same plan, flat on the bottom.

What was the average tonnage of your boat from the opening of spring navigation of 1871, to July 31st.

Seventy tons and five-eighths.

How many trips did you make in that time.

Eight.

What the average of 1870. What the average of 1869.

1869.	July 12	76.12
	" 22	76
	Aug. 5	77.10
	" 14	77.15
	" 23	77.9
	" 29	76.4
	Sept. 8	76.15
	" 20	76.10
	Oct. 4	76.19
	" 16	77.9
	" 30	70.17
	Nov. 10	78.17
	" 20	74.5
1870.	Apr. 30	72.1
	May 5	74
	" 10	74.5
	" 15	75.7
	June 14	69.2
	" 29	72
	July 13	76.12
	" 26	76
	Aug. 6	77.10
	" 14	76.15
	" 23	77.9
	" 29	76.4
	Sept. 8	76.15
	" 20	76.10
	Oct. 4	76.19
	" 16	77.9
	" 30	77.17
	Nov. 10	78.17
	" 20	74.5
1871.	Apr. 24	72.2
	May 1	70.9
	" 7	71.8
	" 16	69.14
	" 26	69.12
	June 21	70.13
	" 28	69.19
	July 19	72.16
	" 31	71.13
	Aug. 9	70.6
	" 19	66.1
	" 30	69
	Sept. 8	76.15
	" 16	72.4

Sept. 24.....	70
Oct. 19.....	54.19
Nov. 5.....	47.18
" 7.....	45.13
" 15.....	49
" 28.....	60.3

State whether you have kept an accurate account of your boating transactions since you went on the Ohio canal.

Have kept a daily record or log book.

JORGEN PETERSEN.

PENINSULA, February 20 1872.

GEORGE WHITTAM.

QUESTIONS BY COMMISSIONER.

Age. 43 years.

Residence. Boston township, Summit county.

Occupation. Boating and farming.

Where have you boated.

Ohio canal.

How many years have you boated.

Sixteen years, more or less.

When the State had the canal, did they keep it bottomed out.

They did; bottomed out every spring, better than they do now.

Was there a large force of men kept at work each spring, (except one) wheeling out the mud and repairing the locks.

For 6 or 7 years I saw as many as 25 or 30 men on this division, from Yellow Creek lock to Kettlewell, or Lock 35.

When the State had the canal, did you have trouble on the summit at Akron.

Never had trouble in 3 years, except once; that was at the sand bridge above Akron; there was a bar washed in, and a boat was stuck, drawing 3 feet 6 inches. I was detained about two hours.

Where is that sand bridge.

Between Lock No. 1 North and Summit lake.

Were the culverts and paddles under the State in good condition.

Yes, only two or three hours going through Akron Locks, now five or six hours.

Could two loaded boats pass each other easily then on the levels.

Never had trouble; only occasionally a level might be down some.

Do you know whether the water is any higher now than in 1860.

It is, or the tow path has settled.

Do you know what caused several boats to sink below Lock 1 last year.

No.

Do you know what caused the break in Cleveland last year.

I do not know only from hearsay.

Do the locks leak under the mitre sills.

Pretty bad the most of them.

Do you often see boatmen hitch horses to gates to open them.

Yes, they have got to do it, or get ten or fifteen men.

What is the reason they have to hitch horses to the gates.

Leakage of locks.

Can loaded boats pass each other easily now.

Only in a very few places. I had a great deal of trouble the spring of '71; only loaded 2 feet 10, boating stone to Akron; could only make two trips a week, when I should easily have made three.

Last spring did you often find the levels dry there at Akron before you. Yes, we did; that was the great trouble; we had to wait to fill the levels.

Was this in the spring of '71.

It was.

What was the cause of that.

The locks leaking; if they were left full at night, they would run off before morning.

Was this owing to a scarcity of water.

Plenty of water; if it had been saved at that time.

Do you know whether they repaired the locks at Akron.

Do not; did not see any; might have been some under the water.

Have you seen many men bottoming out on this division since '61.

I saw three men; about two and a half days they worked. I saw nothing they did, but pick out a few stone, and raised the waste weir at Lock 31.

What is the general condition of the locks now.

Pretty bad, I call them.

Do you have much trouble at the Aqueduct Lock in Peninsula.

Had a great deal in '71.

What was the cause of the trouble.

Want of water, from lock leaking, mud in the bottom of the canal.

Were you often detained there.

I was not, but saw and helped other who were.

Does the grass bother you.

Some, but not so much as the want of bottoming out, and want of water.

Where did you have the most trouble for want of water fall, of '71.

Was not boating.

Do they have careful men to take charge of the canal

Calculate to, but I am no judge.

What was the tonnage of your boat.

When I boated, 16 or 17 years ago, I averaged 85 tons, and have once carried 91 tons and 17 cwt.

What was the draft of water.

Three feet 9 inches for the 91 tons, 3 ft. 3 in. to 3 ft. 5 in. for an average.

Between what points did you carry this load of 91 tons and 17 cwt.

From Tallmadge locks on the Pennsylvania and Ohio canal to Cleveland.

QUESTIONS BY LESSEES.

How much of the time have you been engaged in boating since June 1st 1861.

Commenced in 1862; boated that season, did not boat any more for 2 or 3 years; had 2 or 3 boats built and had men running them for me, and went once in a while a trip on them; since 1863 I have had 5 boats built and men running them, and made 3 or 4 trips a year with them, up to 1871; when I boated two months before the 1st of July, sometimes I went with

them and sometimes I went horseback to meet them, and found them generally stuck in Akron Locks.

How many of those 5 boats did you run at any one time.

About one at a time.

What was the average tonnage of the five.

Sixty-five to 75 tons, and so along.

What do you mean by so along.

The average.

What were your boats ordinarily laden with.

Coal principally.

What tonnage of coal did those 5 boats carry.

Average 68 tons.

What was the highest tonnage.

Do not know of any more, only from hearsay.

What was the highest load carried by either of those five boats while employed by you.

Eighty tons, is what was told me.

What was the draft of water of these boats while carrying 68 tons.

Probably 3 ft. 1 in.

Do you know what draft of water they drew when they carried 68 tons.

I do when on them.

How much water did they draw when laden with 80 tons.

Uncertain; can only guess on 80 tons; because an unusual load.

Since when have you experienced serious trouble navigating the Ohio canal with boats not drawing more than 3 ft. of water.

During the time I boated in '71, my boat only drawing 2 ft. 10 in.

State where and how frequently you were detained last spring.

I don't know of any trip during 15 trips, that we were not detained in Akron Locks in May and June.

In what locks, and how long were you detained.

Most every lock in the short levels, the water was drawn off and we had to wait to have them filled.

How long did it take to fill a level.

Average half an hour to fill a level.

How long did it take you to lock through the Akron locks.

About from 12 to 13 hours some times.

How long did it take you to go through those locks the year before.

Only remember of going through once or twice, probably 6 or 7 hours.

What is the difference in time in locking a loaded or unloaded boat.

It used to be, when locks were all right, an hour's difference.

How many of these short levels had to be filled last spring in locking through Akron locks.

Commence at Lock 16 and go as far as you went through.

How much did these levels have to be filled.

I did not measure them.

Do you know that the Akron locks were not repaired last spring.

I do not know what was done under water, I did not see much above.

What repairs should have been put on the Akron locks last spring that were not made.

The locks should have been fixed tight to hold the water.

How should they have been fixed so as to make them hold the water.

(Overruled by commissioners.)

How do you know there was plenty of water for the Akron levels in the spring of 1871.

More water wasted from locks leaking than was used, is all I know.

Did not all the leakage of the Akron locks, run through the levels immediately below the locks respectively.

It did.

Do you make any distinction between waste weirs and tumbles.

I do not.

How many men were employed by the Lessees on the Ohio canal from Yellow Creek lock, to Kittlewell or lock 35, in spring of 1871.

Do not know.

How do you know how many men were employed by the Lessees from Peninsula lock to Kittlewell lock in the spring of 1871.

Saw three men working or walking along down looking at the mud, and they banked up the waste wier a couple of inches.

Is that all you know abut it.

Yes.

State whether the Cuyahoga river was not so low as not to be able to run the mills.

I do not know of any summer when the mills have not had to stop for want of water.

Was not the river unusually low in 1871.

It was, though I have seen it as low as last year; the dry season we had 17 or 18 years ago, it was as low.

State if the Lessees with the exception of the year 1871, did not keep the canals in such condition as to furnish convenient navigation for boats, not drawing more than 3 feet water; state when, and where it was, and how long it so continued.

Could not tell how much water the boats were drawing, but boats got stuck in two places in Goose Pond, and on Long Pinery and Feeder Lock below Peninsula, which continued two months, in fall of 1870; do not know whether it was cleaned out in spring of 1871 or not.

QUESTION BY COMMISSIONER.

Do you know of any new lock gates in Akron Locks in 1871.

Did not see any.

GEORGE WHITTAM.

DAN P. CHAMBERLIN.

QUESTIONS BY COMMISSIONER.

Age. 30 years.

Residence. Cleveland.

Occupation. Boatman.

Where have you boated.

On Ohio canal.

How many years.

About 16 off and on.

When the State had the canal, did they keep it pretty well bottomed out.

Pretty well.

Was there a large force of men bottoming out the canal each spring, except one.

Can remember 2 or 3, because I worked myself.

Was the cribbing and the general condition of the locks in good repair while under the charge of the State.

So far as I can recollect, they were.

Did you then have trouble with low water on the Summit.

Had trouble from Waterloo to the R. R. Bridge below the river, and below Wolf Creek Lock.

What year.

Do not recollect, but under the State.

What was the cause.

The bottom was too near the top.

Were the culverts and paddles in good condition.

Too far back to recollect.

Could two loaded boats pass each other easily then.

Never had any trouble, unless the levels were down.

Do you know whether the water is higher on the levels now.

The water is higher or tow-path lower, do not know which.

Do you know the depth of water over the mitre sills.

Do not.

Do the locks leak under the mitre sills, as a general thing.

Some of them under the mitre sills or gates.

Is the cribbing good.

In the Akron locks, pretty good; from here to Cleveland, pretty poor.

Do you know of any boats being injured by cribbing.

I tore a chunk out of mine, and had to put her on the dock for repairs.

Can loaded boats pass each other now, or since 1861, on all places in the canal.

They cannot.

On what points.

On Portage level, Yellow creek level, Johnny Cake level, Peninsula level.

What is the reason.

Bottom too narrow.

Did you know of loaded boats wedging, previous to 1861, in ordinary stages of water.

Never was on any that wedged.

Have you seen many men bottoming out the canal since the lease.

Yes, have seen some.

Does the grass ever give you any trouble from not being mown.

Yes, sometimes.

Did you ever find the levels run down before you in the first part of the season of 1871.

Yes, I have.

What was the cause.

Locks leaked pretty badly; the boat going ahead might leave a culvert open and not notice it.

Was it often the case that these levels were run down.

Do not know as to that, sometimes find them so, and others not.

Did you ever find them so previous to 1871.

Yes.

Previous to 1861.

Yes, sometimes would find them so.

Were any new gates put in between Cleveland and Akron Summit in 1871.

Do not remember whether new ones were put in at Lock 5; in Akron, then or year before. A pair of new ones were put in Johnny Cake Lock.

Did you have any trouble at Peninsula Lock in 1871.

Yes, was detained several times.

Last season, where were you troubled mostly by low water.

Summit and Junction levels, at Akron.

Were you troubled with low water after passing Lock No. 16.

Got along passably well.

QUESTION BY LESSEES.

Was the water drawn off, or any repairs made on this part of the canal in the spring of 1861.

I can not tell.

QUESTION BY COMMISSIONER.

Were thorough repairs made the spring before.

Do not recollect.

DAN P. CHAMBERLIN.

WILLIAM BIDWELL.

QUESTIONS BY COMMISSIONER.

Age. 37 years.

Residence. Trenton, Tuscarawas county, Ohio.

Occupation. Boating.

Where have you boated.

Principally from Trenton and Newcastle to Cleveland, have frequently been clear through the canal.

How many years.

Twenty-two since I commenced; some 3 or 4 years I was not on.

When the State had the canal, did they keep it well bottomed out.

I believe they did.

Was there a large force of men kept wheeling the mud and repairing the locks every spring, except one.

There was.

Did you have trouble on Akron Summit level under the State.

I think in 1855 or 1856, we did; my brother and I found a number of boats stuck there in the spring, first trip.

Were the culverts and paddles then in good condition.

Sometimes they were and sometimes not.

Could two laden boats pass each other easily under the State.

Not always, I remember being detained one whole night on the Hebron level; do not recollect any other place at that time.

Is the water any higher over the mitre sills now than previous to 1861.

Cannot tell, but think not, in common stage of water.

Can boats pass each other now in all the levels in ordinary stage of water.

Cannot; on the Bolivar level there are many places, that are dredged out where they can; one-half mile on the Trenton level; from Fulton down to Barnaby McCue's coal shutes, about one-half or three-quarters of a mile; only one passing place in that distance; a cut above Fulton, about one-half mile long; some places on Wolf Creek level; Peninsula level, from Waterman's lock to Deep lock. I expect I could think of a hundred places where two loaded boats could not pass. The reason I know of them, I have had to unload so many times to get by.

What is the cause of the difficulty in passing.
Many causes. 1st, the canal is not properly cleaned out. 2d, many of the boats load too deep for the amount of water.

Do you see boatmen hitch horses to gates to open them now.

Once in a while.

Is the cribbing good now.

Some is and some not, if the fender post of the cribbing of Lock 1 had been up, it would have saved the smashing in of two hoods of my boat, at Lock 21, on tow path side.

QUESTIONS BY LESSEES.

Why have horses been hitched to gates to open them.

1st, because locks leak so much above and below, that the hands could not open them. 2d, to open them quick when the boat was too near.

Have you not seen horses used ever since you boated to open locks.

I have.

If boats had been laden as heavily when the State had control as now, would they not have had difficulty in passing.

I do not know but they would.

QUESTION BY COMMISSIONER.

Was it because the gates were out of order that horses were hitched, or to get through quickly, under the State.

Very frequently out of order and to get through soon.

QUESTION BY LESSEES.

Has the Trenton level been dredged so as to make loaded boats passable since the time of which you have spoken.

About a mile it is good, and there is one-half a mile on the level on which they cannot pass.

WM. BIDWELL.

AKRON, February 21, 1872.

GEN. L. V. BIERCE.

Age. 70 years.

Residence. Akron since 1834.

Occupation. Lawyer, but not a practitioner.

Are you acquainted with the Ohio canal.

Not sufficiently acquainted to give any information upon that.

Where was the connection between the Pennsylvania and Ohio canal, and if the Pennsylvania and Ohio canal was a benefit as a feeder to the Ohio canal.

I was connected with the original formation of the Pennsylvania and Ohio Canal Company. We procured a charter, defining that the canal should commence at a point on the summit of the Ohio canal, the great argument in its favor was, that it was needed as a feeder to the Ohio canal on the Portage summit. With that view the surveys were made and the canal staked out through Middlebury, to empty into the Ohio canal near what is called the Guard Lock on the summit level. A short time afterward, and I think the next year, application was made to the Legislature for an amendment to the charter; and as was said, through the in-

fluence of Judge King who was our Senator, an amendment was made inserting the words "or near" after the words "at or a point on" the Portage Summit, so that it would read at or near the Portage Summit. Immediately afterwards the route of the canal was changed, through Cuyahoga Falls, and terminating at which is called Mill street in Akron; then they locked up one lock to get into the Summit basin and one lock more to get on to the Portage Summit, so that instead of being a feeder to the Ohio canal, every boat that passed drew one lock full of water from the summit basin of the Ohio canal, and one from the summit level of the canal into that basin. Thus the water coming from the north, and those that were thus drawn from Ohio canal, came together at the foot of Lock 1, Pennsylvania and Ohio canal, and were thence conducted to the Stone Mill, in a race, and carried down in a separate race from the canal to the Brick Mill, then to what was called the White Factory, then to Chamberlain's Mill, then to the Ætna Mill, then to Cascade Mill, then to the German Mill, and thence to a point nearly opposite Lock 16, where it joined the Little Cuyahoga river. In connection with the Little Cuyahoga river, at some distance below it became a feeder of the Ohio canal. The Ohio canal thus loses a lock of water from the summit basin, every time a boat passes, which is not returned to the canal again, until it gets below Lock 16, as the great want of water of the Ohio canal is on the summit level. I think the loss of water on the summit is more injury to the Ohio canal than the benefit of having it as a feeder below Lock 16, for if canal boats can pass the summit and 16 locks, they can pass from there to Cleveland on the long levels, especially after Little Cuyahoga comes into it. Besides this, at Lock 4, by means of a dam erected by Judge King, the waste water of the canal is carried on the east side, to the race of the Pennsylvania and Ohio canal running to the Stone Mill, instead of running on the west side where it would have returned to canal below the lock. This waste water is not returned to the canal until they get below Lock 16. Whenever there is waste water it runs from Lock No. 4, at the present time. It was constructed, in the year 1830, I think. From the foregoing facts I am of the opinion that the water drawn into the Pennsylvania and Ohio canal from the summit basin, and not returned until the canal reaches Lock 16, is more injurious to the Ohio canal than its entering in connection with the Little Cuyahoga below Lock 16, is beneficial.

QUESTION BY LESSEES.

Do you know what quantity of water is required by the long levels below Lock 16 to supply the leakage and evaporation on such levels.

I do not know the quantity required, nor the amount of evaporation but suppose it is not greater in proportion than on the nine mile summit level, from which the water is drawn.

L. V. BIERCE.

GEN. GEORGE W. McNEIL.

Age. 59 years.
Residence. Akron.
Occupation. Milling.

QUESTIONS BY LESSEES.

How long and how intimately have you been acquainted with the Public Works of the State.

In this vicinity, since 1838. I have been interested in shipping and boating since 1838.

State to what extent you have been interested in shipping since 1838.

In 1838 and 1839 was shipping clerk in the Stone Mill; they had 7 or 8 boats; in 1840 I ran a boat for the Stone Mill through that year; I made the longest trip that was ever made, I think, going from Portsmouth, O., to Albany, N. Y., with the same boat. In 1844 I owned, and have been interested in canal boats ever since. We have always had at the City and Aetna Mills a boat which belonged exclusively to them, and run for those mills. We have been agents for the N. Y. Company running from Cleveland to Akron, and further south, for 2 or 3 years. I think we had 5 or 6 boats. We were interested in the line of packets which run from Columbus to Chillicothe some 3 years. We run a line of packets from Akron to Cleveland.

State the amount of shipping, as nearly as you can, that you have sent over the Ohio canal since 1860.

We have, I think, shipped about half the flour we have manufactured. Our two mills have four run of stone each; should think our shipments would be about 30,000 bbls. per annum via Cleveland on the canal. We bring up considerable wheat from Cleveland; two years we brought most of the wheat from Cleveland by boats.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the lessees as at the time of the execution of the lease of the same.

It has been kept in better order by the lessees than ever before; our boats have carried larger loads and less trouble to get along, the reason of this is, that the lessees have been more prompt in making repairs and paid better attention to taking out bars.

State the average tonnage of boats navigating the Ohio canal at and before June 1, 1861, and the percentage of increase of tonnage of boats since that time.

Full 15 tons more now than at that time; the largest tonnage we could get in 1860 and 1861, was 600 bbls. of flour, now we carry 700, 750, and even as high as 820 bbls.; in 1870, 216 lbs., gross weight of a barrel, making about 89½ tons.

State what tonnage you usually carried from Akron to Cleveland in '71.

Some 750 to 775 bbls., just as our orders were, and if we had way freight that was also put on.

Relatively, what was the carriage of the same boats compared in 1861 and 1871.

With the same class of boats, we carry more now than in 1860; this boat we have now, which carried the largest load, is not quite so large as some we had before; it is a deck boat.

What depth of water did the boats usually draw in 1861, and what depth do they draw in 1871.

Full 6 inches difference in the draft of water.

State whether any water was drawn from the Ohio canal during the winter of 1870 and 1871, and the whole of the year 1871, for the use of any of the mills below Lock 1, in Akron.

I never knew any water drawn during that time for any such purpose.

State whether there was a scarcity of water in 1871 in the Ohio canal, in the vicinity of Akron, and if so, what was the cause.

A great scarcity of water; the cause was the reservoirs run out and they had not water enough to keep the canal more than half full; there was not rain enough; Springfield lake was not more than half full, that being a reservoir to supply our mills with water.

Was there a sufficient fall of rain during the winter of 1870 and 1871, and the rest of the year 1871 to fill the reservoirs feeding the Akron Summit.

There was not.

State the extent of the drouth.

I think it was the dryest season I ever knew in the last 30 years.

State whether it was a usual thing for the short levels in Akron to be without sufficient water for lockage without filling these levels before '61.

Yes, that has always been the case since I was acquainted with the canal.

State how the water for the mills in Akron is procured.

Our supply is the Little Cuyahoga river, with two large reservoirs, which we fill when we have an abundance of water, and draw from during a dry time.

How far are these from canal reservoirs.

Some five or six miles.

Did you see the Ohio canal reservoirs in '71.

Did not; saw the Summit level and canal.

Are the canal reservoirs, about Akron Summit of sufficient capacity to furnish the Ohio canal with the necessary supply of water during periods of drouth.

I do not think they are.

QUESTIONS BY COMMISSIONER.

How have you been able to carry larger loads since 1860.

By boat drawing more water.

Have they increased the depth of water over the mitre sills since 1860.

No, I think not.

How have they increased the depth of water.

By cleaning out the bars and shallow places in the canal, bars washed in from rains and gullies. When Pomeroy was superintendent under the State, there was one spring we had a great deal of trouble, from the canal being filled with bars; he did not understand making the protection to prevent the bars; in the levels below Lock 21, we had to frequently drive down to Old Portage some five miles to get our passengers and bring them up.

Is the model of the boats previous to '60 the same as now.

About the same.

At what time did they make the change in the model.

About 1840, they brought some from the Erie canal which were larger; then they commenced building larger.

Between what locks do you ship your flour from.

From level between Locks 8 and 9.

What were the names of the boats you run in 1860.

Akron, City Mills, New York, A. J. Breed, and I thing G. W. McNeil; cannot recollect all.

What are the names of your boats now.

Akron.

Is that the same as the one named above.

No, this one was built in '69.

Do you know that there has been no water drawn from the Ohio canals for the mills in '70 and '71.

I do know, that there was not.

Do you know the water shed of the two reservoirs of the Hydraulic Company.

I do not.

Do you judge because the Hydraulic Company's reservoirs were not full, that the Ohio canal reservoirs were not.

I do.

Do you know the amount of rain fall in '71.

I do not.

QUESTIONS BY LESSEES.

What was the draft of water of the boat navigated by you in '71, when carrying 700 to 750 bbls.

About 3 feet 4 or 5 inches.

Did your boat run over the Akron Summit in '71, and if so, what tonnage.

It did, I bought some three boats loads of Dr. Steese, at Massillon, and brought the wheat from Fulton, some 75 tons. I bought one load of Mr. Russel at Clinton, about 78 tons. I think was in the month of June.

Did you have difficulty getting over.

No; it was before the reservoirs gave out.

QUESTIONS BY COMMISSIONER.

Do boats have any trouble in passing each other on any of the levels.

Not unless the water is drawn. Lock 1 of the Pennsylvania and Ohio canal, I would like to state, that the gates were dusted down, the paddles chained and locked and were not opened during the winter of '70 and '71.

Do you go up and down the canal from Akron to Cleveland.

Not since we run packets in '52 or '53.

GEO. W. McNEIL.

A. H. CUMMINS.

QUESTIONS BY LESSEES.

Age. 57 years.

Occupation. Merchant miller.

Residence. Akron, since 1834.

State what mills you own and whether you manage them personally.

Half owner of Stone Mills at Akron, and I manage them personally.

State what is the source of supply of water for your mills.

From reservoirs in Suffield, Portage county, and Springfield, Summit county, and the Little Cuyahoga river.

State whether there was sufficient fall of rain in the winter of 1870 and 1871, and the balance of the year 1871, to fill the reservoirs in the vicinity of Akron and the Portage Summit.

I should not think there was. The mill reservoir at Springfield, was

not filled as full as usual; at Suffield, it had not been drawn down before, as it was a new reservoir; presume it had not been drawn down for a long time. There was a scarcity of water at Akron, and all over the country in this neighborhood, as it was a very dry season.

State whether any water was drawn from the Ohio canal during the winter of 1870 and 1871, and the entire year of 1871, for the use of the mills in Akron.

There was not so far as I know; the Stone Mill is the first one on the race, and no considerable quantity of water could have been drawn without my knowledge. My mill is about five hundred feet from Lock 1, on Pennsylvania and Ohio canal.

Has there been any water drawn from the Ohio canal at or near Lock 4, that runs into the race leading to the Stone Mill, if so, when did it so run.

There has not been for about 13 years. The Stone Mill had a right to the surplus water at Lock 4 after the power there is satisfied, but the water if used by the mill, must be returned to the canal at the foot of Lock 5.

The water from Lock 4 did once run to the Stone Mill, one water wheel at said mill was made smaller than the others to receive this water; as the level above Lock 4 is some 5 feet lower than the mill race, the difficulty of separating the water from the mill race water so it could be returned to the Ohio canal at the foot of Lock 5, caused so much trouble with the mills below, that it was abandoned long ago, 10 years ago or longer, and the race from Lock 4 to the mill filled up.

What instructions if any, have you given the employees at the Stone Mill, in relation to taking water from Lock 1 on the Pennsylvania and Ohio canal.

I instructed the head miller not to allow any man about the mill to draw water at the lock, and that if any one did do so, he would be discharged immediately, and these instructions included the head miller.

State whether these instructions have been carried out.

They have been faithfully carried out.

State what precautions were taken to prevent any leakage in Lock 1, in Pennsylvania and Ohio canal, in winter of 1870 and 1871.

The gates during part of the time were chained up, and the lock dusted down, so that the leakage was not a third what it had been before; that at the time the conduit was built, spring of 1869, the gates were made much tighter than they had been before, and that the leakage since then has been much less than before.

State in what condition this lock has been since the spring of 1869, and its leakage.

As good as the average of locks on the Ohio canal, and in good condition.

State whether there has been any unnecessary leakage at this lock since spring of 1869.

There has not.

State whether the Akron Hydraulic Company furnished water for the Ohio canal in the fall of 1871, for purposes of lockage, if so, where was it introduced into the canal, and for how long a time.

They did, it was introduced into the Ohio canal between Locks 4 and 5, it was turned into the canal Sundays for about one month, when the mills were not running. The Akron Hydraulic Company is a chartered

company, who own the races and reservoirs which furnish the water power to the mills at Akron.

QUESTIONS BY COMMISSIONER.

Do you know the water shed to the Hydraulic Company's reservoirs.

Do not know.

Do you know the amount of water shed to the reservoirs of the Akron Summit.

I do not know.

How do you form your opinion that there was not sufficient rain to fill the Akron and Portage Summit reservoirs.

From the general drouth, and that the Springfield Lake was not filled.

Were you acquainted with the canal prior to 1860.

Yes.

What was the capacity of the canal then compared with it now.

I think it is much greater now than then.

Do you know from personal knowledge.

No, not recently.

A. H. CUMMINS.

JOHN A. BOTZUM.

QUESTIONS BY LESSEES.

Age. 35 years.

Residence. Northampton.

Occupation. Mercantile business, farming, timber business, and own a canal boat.

How long have you been acquainted with the Ohio canal.

Since 1842.

How long have you boated.

Bought a boat in 1861 or 1862, am not certain.

State whether you go frequently on the canal.

In 1871, went over once a week on horseback, and sometimes with the boat, and in 1870, as often as once a month.

State whether needed repairs have been as promptly made as by the State.

I think they have as far as I know.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the Lessees, as at the time of the execution of the lease of the same.

It has.

QUESTIONS BY COMMISSIONER.

Did you notice any repairs to the canal when under the State.

I did and helped to work on them.

Are the locks in as good condition now as when under the charge of the State.

Do not see much difference.

Have you noticed them particularly.

I have.

Is the water in the levels now as high as previous to 1861.

I think it is as good, and I have the means of knowing, as I have a saw mill, did not have it previous to 1861.

Where do you get the water from for your saw mill.

From the canal, a water lease.

Was there a feeder near you called Yellow Creek.

Yes.

How long since it was abandoned.

Fifteen or sixteen years ago I think.

Do you know of two boats often wedging.

I do.

What was the cause.

Lack of water; and boats loaded too deep, so I would hear the boatmen say.

QUESTIONS BY LESSEES.

Did not the waste water from your saw mill run into the Cuyahoga river at the time of the lease.

Yes.

How long before this had the water thus wasted.

As long as I can remember.

State when these waters were turned into the canal by the Lessees.

In 1868 or 1869.

JOHN A. BOTZUM.

PHILO McCOY.

QUESTIONS BY LESSEES.

Age. 44 years.

Residence. Boston, the last 12 years.

Occupation. Boatman for 20 years mostly, on the Ohio canal.

State how extensively you have boated on the Ohio canal.

For the last 6½ years all the time, first year and a half in partnership the last five years had a boat of my own, the last year owned two boats.

Over what portions of the Ohio canal have you boated.

Clear through frequently; was down to Chillicothe last spring.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the Lessees as at the time of the execution of the lease of the same, June 1st, 1861.

It would average better, as far as my knowledge.

State the average tonnage of boats navigating the Ohio canal, before '61.

About 60 tons.

State the average tonnage of boats now.

Seventy-four to 75 tons.

What draft of water, do boats usually draw now navigating the waters of said canal.

Three feet 4 or 5 inches.

Have not the canals been kept, and maintained by the Lessees in good and proper condition and repair for prompt, speedy and successful navigation by boats not drawing more than 3 ft. water.

They have.

State whether the needed repairs have not been made as promptly and thoroughly by the Lessees, as when managed by the State.

Better and quicker.

State whether it was usual for boatmen to use their horses in opening lock gates before '61.

Not to my recollection; sand would get in any time making them hard to open.

State what tonnage your boats carried in '71.

One 72, other 77 and 78 tons; great difference in boats.

State whether you had any difficulty in running your boats in '71, excepting such as was occasioned by the extreme drouth.

Did not.

State how long it took you to lock through the Akron locks.

Four to five hours, owing to thickness of boats in locks; have been through in three hours in '70.

State whether you were seriously hindered in getting through the Akron locks to July 1st, 1871.

Do not think of any.

What draft of water did your boats draw in making the round trip from Cleveland to Chillicothe in the spring of '71.

Two feet nine inches. Had two boats with me.

State whether you were interrupted in the navigation of your boats during your trip.

None, except at the deep cut at the Licking summit.

What occasioned the delay.

Not water enough; detained each way a day; had to lighten up; had 50 tons of iron on each boat.

QUESTIONS BY COMMISSIONER.

Did you boat previous to 1861 on the Ohio canal.

I did.

How do you form your opinion that the canal is better now than before the lease.

Can carry bigger loads; some locks leaked then and now.

Is the water any deeper now than in 1860.

Average a little better on the mitre sills.

Do you have any trouble with your boat wedging on any of the levels.

None, unless three abreast.

Did you not often, in the spring of '71, find the Akron levels run down.

Sometimes, not often.

What was the cause.

Deep loaded boats drawing the water down, and drouth.

PHILO MCCOY.

SAMUEL CASE.

QUESTIONS BY LESSEES.

Age. 54 years.

Residence. Peninsula.

Occupation. Lock-tender.

How long have you been acquainted with the Ohio canal.

More or less since 1843.

In what capacity have you been employed on the Ohio canal, and when.

Quite a number of years; ever since I have been there, or 28 years.

State whether you were ever employed in bottoming out the canal when in the hands of the State.

I was, a good many times.

State whether repairs have been made as promptly and thoroughly under the lessees as under the management of the State.

I think they have; the State sometimes did considerable work and sometimes not so much; the lessees have done as much on the division where I am acquainted, and as well.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the lessees as at the time of the execution of the lease of the same.

I think it has; I know boats run, and I think the boats are larger and carry more load than 10 years ago, and some draw more water.

Have not the canals been kept and maintained by the lessees in good and proper condition and repair for prompt, speedy and successful navigation for all boats not drawing more than 3 feet of water.

They have repaired every spring; if any breaks, they attended to them promptly; there was no time, except the extreme drouth of last summer, but what a boat could float readily drawing 3 feet of water; some have drawn 3 feet 7 or 8 inches.

State what draft of water boats usually passed the Peninsula level in 1871, before the extreme dry weather.

Forepart of the season boats drew 3 feet 2 to 6 inches.

State whether the Red Lock was out of repair in 1871, and if so, how long.

Something over 24 hours; was not out of repair at any other time that I know.

QUESTIONS BY COMMISSIONER.

Did boats often wedge at the levels near Peninsula.

They did.

Were the deep lock and aqueduct lock in good repair.

No, leaked some; but as good as usual.

Do you consider the aqueduct safe.

Could not say; did not leak so badly in 1871 as the year before.

Are you employed by the lessees at the present time.

I am.

QUESTIONS BY LESSEES.

Boats wedged frequently on the Peninsula level.

A good many boats on that level.

Would boats drawing 3 feet of water wedge.

They would not, except in extreme dry time; there might be some places on the levels where they would wedge.

SAMUEL CASE.

AKRON, February 22, 1872.

E. SHOLLEY.

QUESTIONS BY COMMISSIONER.

Age. 39 years.

Occupation. Boating in summer time.

Where and how long have you boated.

I am not positive, but think it was 1863 when I commenced boating on this canal.

What is the tonnage of your boat. 79 or 80 tons.

What is the draft of water on 80 tons.

I never measured particularly, but think 3 feet 8 inches.

Do you have any difficulty in passing boats on the levels with such loads.

Yes, sir, very frequently.

Would you have if each boat only loaded to 3 feet.

Some places we would, and others not.

Are the locks and lock gates in a good condition now.

They are not in as good a condition as when I first commenced boating.

Did you often pass through the Akron locks.

Yes.

Did you often find the levels run down in them.

Very frequently, in the morning.

QUESTIONS BY LESSEES.

State when canal boats drawing only three feet of water could not get along well on the Ohio canal.

Last summer during the drouth, also three or four years ago.

Were not boats drawing only three feet of water able to get along well on the Ohio canal, except during the extreme drouth of last season.

Yes, sir, they could.

If the usual spring repairs were made to these locks, would they not be in as good condition as when you commenced boating.

I should think not, unless they made more than usual spring repairs; that is my best judgment.

E. SHOLLEY.

WM. SOUERS.

QUESTIONS BY COMMISSIONER.

Age. 31 years.

Residence. Coventry, Summit county.

Occupation. Farmer.

Are you acquainted with the lakes and reservoirs which supply the Ohio canal at Portage Summit.

Some little.

Have you lived near the reservoirs any number of years.

About 14.

Do you know anything about the high water mark of the reservoirs.

I know where it is, I live on a farm between the two reservoirs.

Have you each spring before 1871, noticed the water in the reservoirs up to the water mark.

Yes, could not tell positively about the year 1870.

Do you know of any water being drawn through the culverts in January and February, 1871.

Yes, sir. I saw the water running.

Do you know by whom it was drawn.

I do not.

Is it a usual thing for the water to be drawn from the culverts in the winter.

It is not, while I have lived there or for 12 years.

Do you know of water being drawn at any other point.

No.

Do you think with good care the reservoirs might have been filled in the spring of 1871.

I think so, if the water had not been drawn off.

Usually in the spring previous to 1871, was there a large amount of water wasting away from the reservoirs.

Could not tell positively, think not very much.

QUESTIONS BY LESSEES.

For how long a time and how frequently, did you see water wasting through the culverts, in the January and February in 1871.

Could not answer positively, perhaps one month perhaps two; I passed there every day and saw it running while it did run.

Why did you fix upon January and February as being the time.

I think that was the time it was running. I cannot fix a date, but was hauling lumber from Akron to my father's house.

How long were you hauling lumber by the culverts.

A good while, my father built a large house and drew all the lumber with one team.

How do you know that water was not frequently drawn through the culvert, before the winter of 1871.

Because I lived right there, or about a half a mile, I guess, from the culvert.

How many feet of water was drawn from the reservoirs in January and February, 1871.

Probably five feet.

Why do you say probably five feet.

I judge it to be in the neighborhood of 5 feet.

How near full was the reservoir before the culvert was opened.

Might have lacked six feet of being full, can not tell positively.

How near full was the reservoir when water was let into the Ohio canal in 1871.

I cannot answer.

How can you then tell, that the reservoirs would have been filled in the winter of 1870 and 1871, if the culvert had not been opened.

Suppose so, did not say positively.

WM. SOUERS.

CHARLES BAUCHMAN.

QUESTIONS BY COMMISSIONER.

Age. 32 years.

Residence. Coventry township.

Occupation. Miller.

Are you acquainted with the lakes and reservoirs which supply the water for the Portage Summit of the Ohio canal.

Yes.

Where are your mills.

State Mills belongs to the State.

Do you know of any water being drawn from the reservoir in 1870 and 1871.

Yes, in January and February, 1871.

Was this water drawn from the culvert or at the State Mills.

At the east culvert a mile away from the mill.

Do you know by whom it was drawn.

Yes sir.

By whom.

William Merrit.

Was there much water drawn.

Considerable for awhile, did not last long.

Was water drawn at any other place.

Yes, at the mill.

Was any water drawn at the mill except to use for running it.

No, only drawn for the use of one run of stone.

Has water been drawn at the State Mill for a number of years.

Yes sir. The mill was running there before the reservoir was built; do not remember when the reservoir was built.

Do you think the reservoir with proper care could have been filled last winter.

Yes, if they had left in what was there.

Is it a usual thing to draw water at the culverts in the winter, in low water.

It is not.

QUESTIONS BY LESSEES.

Did you not make it a part of your last answer that water was drawn from the reservoir for the use of the State Mill during the winter.

I did.

It is true that you usually drew water from the reservoirs at the State Mill during the winter.

Yes, sir.

Has water been drawn for the use of that mill every winter.

It has, with the exception of this winter, not so much.

Are you the lessee of water power at the State Mill.

I am.

Have you a copy of the lease with you.

I have not.

Under your lease, have you the right to draw water for the State Mill during the winter whilst the reservoir is being filled.

It has always been drawn; it is the surplus water.

Is there any surplus water while the reservoir is filling, and before it is filled.

No, sir.

By what authority, from the lessees, did you draw water from the reservoirs during the winter of 1870-'71.

They said that I should draw to keep up the level.

Who gave you this instruction.

Mr. Merritt.

When did he give it to you.

At the time he opened the culvert; not far from Christmas or New Year.

Did you keep the keys of the culvert house in the years of 1870 and 1871.

I did.

How long has the key been left in your possession.

Ever since there has been a lease for the State Mill.

Who has the keys now.

One at my house and one in Akron.

Were not the keys, or either of them, taken from you in January or February of 1871.

No, sir.

Why were the keys left with you.

On purpose to take care of the reservoirs when they were filling up.

Were you employed by the lessees to take care of the feeder and reservoirs.

I was bound, by the lease, to take care of the feeder.

Were you employed by the lessees to take care of the reservoirs.

I was.

How do you know that the reservoirs could have been filled in the winter of 1870 and 1871.

Because there was about six feet of water in when it was opened.

Is that all the reason.

All that I can give.

What is the usual time of filling the Summit reservoirs.

From the time navigation closes until it opens.

When are they filled to their utmost capacity.

Not until spring.

Which key is in your possession.

The one to the east culvert, the other is in Akron.

CHARLES BAUCHMAN.

WM. BAUGHMAN.

QUESTIONS BY COMMISSIONER.

Age. 50 years.

Residence. Summit, O.

Occupation. Miller.

Are you acquainted with the lakes and reservoirs which supply the water for the Portage Summit on the Ohio canal.

Yes.

Name the lakes.

Turkey Foot, Rex, and two large lakes; do not know their names.

Is there a large reservoir beside the lakes.

Yes; when the water is at high-water mark it makes one large reservoir.

What year was the reservoir completed for the use of the Ohio canal.

About 1840, I think.

How long have you lived near these reservoirs.

Twenty years at the reservoirs, from 1842 to 1862; left then, and came back in 1871.

Where did you live those nine years away.

The first five at Ghent, the last four in Akron.

Did you help Capt. Howe, Engineer of the Ohio canal, at the time this reservoir was built, fix the high-water mark for it soon after its construction.

I helped cut the high-water mark three or four years after its construction; right across, on the island from the State Mill, on a notch on a chestnut tree.

In the 20 years you lived at the reservoirs, did you see the water each spring nearly up to this water-mark before they began to draw water to fill canals.

I do not know of any spring that I ever saw it exactly up to the mark; we did not fill it full for fear of a freshet; one June it was 4 inches below, and there came a freshet and we let out all the water we could for 24 hours, when it rose to 4 inches above the mark.

Were you employed by the State to take charge of the reservoir.

We had control of it.

In what mills did you work in the winter of 1870 and 1871.

In Herrold and Harrison's mill, in South Akron.

Where and what kind, and how many have they.

Below the summit, because the water is taken from the Summit level; one a grist mill, and one a saw mill.

How many run of stone in the grist mill.

Two run.

What was the power that run those mills in '70 and '71.

Water power.

From what canal do you get the water.

Ohio canal, Summit level.

Where did the water come from in '70 and '71.

From the Summit level.

Was this water drawn to the Summit level from the reservoirs in '70.

Did not see it drawn.

Was there more water wasting there than usual in '71.

In January and February, 1871, we had more water than we wanted.

Did you have more water the three years previous.

Had no water to do with; lay still most of the time.

Do you know whether there was any water drawn from these reservoirs.

Do not.

Do you know anything of the condition of the Akron locks.

Only about Lock 1, and Wolf Creek lock; they are the only ones I notice or cared anything about.

Were these locks in proper condition in the winter of '70 and '71, to hold the water.

No.

What was the trouble.

Worn out and became old, as things do.

Last spring, just before they were ready to fill the canal, was the Summit level full. No.

Had it been during the spring.

Yes.

Had it been wasted away before they were ready to fill the canal.

Yes.

At what point had it wasted.

The feeder; ran down the Tuscarawas river.

Is there a pond called Long pond use as a reservoir.

Yes, even with Summit level, when all right.

After the canals were filled, how much was the Summit level run down.

It was not full when they commenced, and was not all summer down from six to seven inches.

Do you think if the water had been properly managed in '70 and '71, that the reservoirs could have been filled.

Yes.

Was the canal operated many years before this reservoir was open.

It was, but do not know the number of years.

Do you know any thing of the condition at the present time.

Doing first rate; will be full and more to; saw it two weeks ago.

Is it as nearly full now as the average of the 20 years, in your knowledge.

Yes, more too; I have seen it lower this time of year.

QUESTIONS BY THE LESSEES.

Is it not usual to keep the water out of the reservoirs, until the spring freshet, so as to prevent injury by the sudden rise of water of these freshets.

We were taught by Captain Howe to raise the water gradually, until the ground was settled in the spring, after the frost was out the ground then fill as fast possible.

How many feet is the reservoir from being filled at this time.

Two weeks ago I saw it, but do not know the number of feet.

Wherein were the reservoirs not properly managed in the winter of 1870 and 1871.

I know nothing at all about it, as I was not there.

How long did the waters of the Summit level in the spring of '71, waste away through the Tuscarawas river at the feeder.

When the guard lock was shut, the planks were taken off the feeder dam and kept off until the guard lock was open, then they were put on. This was during the time the water was out of the canal for spring repairs.

Were not the planks at the waste weir always taken off at this place, when the guard lock was shut, and the water was drawn off for repairs.

Do not know, as I never noticed how it was managed at those times.

When the plank were put on in 1871, did not the Summit level immediately fill up.

No, sir.

How near did it fill up.

Cannot really tell how near.

Why did Herrold & Harrison put steam power into their mills, and when was it done.

Summer of 1871, because they had no water in the summer.

By what right did Herrold & Harrison use the waters of the Ohio canal for power at their mills.

I do not know.

Did not the Lessees during the winter of 1870 and 1871, prohibit the drawing of water from the reservoir for the use of the State Mill.

Do not know.

Did you not complain to Col's. Manypenny and Nugen last fall because they had restricted the use of water from the reservoir to the State Mill, during the winter of 1870 and 1871.

No, sir, I have not spoken to Col. Manypenny for a number of years.

Was not the bulk head or fore bay of the State Mill taken out in the fall of 1871, so as to enable the Lessees to lower the waters in the reservoir to feed the canal.

They were.

How much lower did this enable them to draw the water from the reservoir.

As near as I can judge four feet.

Did you not have an altercation with Col. Nugen and the men who did the work.

Yes, I thought it a little rough.

At what time in the year was it usually considered safe to fill the reservoir to its fullest capacity.

About March, when the frost was out of the ground.

How low was the water let off the reservoir at the time you say it was filled in 24 hours.

Two or three inches below the mark, or so it was all safe.

How low was the water usually drawn out of the reservoirs, previous to 1870.

We were never short of water at the State Mill except in 1846.

How many feet were the reservoirs usually lowered before the year 1870.

I do not know, never measured.

• WILLIAM BAUGHMAN.

BENJAMIN BOWERS.

QUESTIONS BY LESSEES.

Age. 59 years.

Residence. Coventry township.

Occupation. Farming.

Do you own a saw mill and water power near the Summit reservoirs.

Part owner.

State whether you had any arrangement with the Board of Public Works by which you were permitted to draw water from the Summit reservoirs, if so, when was it made, and what amount of water were you permitted to use.

We thought we had an arrangement, and made a tunnel last year, and put in a 12 inch pipe, and were to have the surplus water, when the reservoir was filled so there was any to waste; we were to have it instead of letting it run off, in case the water was to be drawn more than the State Mill needed, and canal boats were running.

With whom did you make the arrangement.

Col. Porter of the Board of Public Works.

Was it a written agreement.

Verbal, but understood it was to be a written agreement before we

completed the work, but previous to its completion, we were notified that we could not proceed with the work.

Who notified you.

Mr. Merrit and Col. Nugen, agents of the Lessees.

State whether you were reimbursed for any of your expenses made in that behalf, if so, how much and by whom.

Two hundred and eighty dollars, by Col. Porter, member of Board of Public Works.

Before you stopped your work and after Col. Nugen had notified you to quit, did not Col. Porter notify you that the Lessees would not consent to the use of the water, and that you must cease operations, and was not the amount of compensation then fixed.

Col. Porter came just before head gates were in; amount of pay not agreed upon then.

QUESTIONS BY COMMISSIONER.

Are you acquainted with the reservoir at the Portage Summit, at the Ohio canal.

Before and ever since it was built, do not recollect the year.

Did you see any water drawn from the reservoir in January and February in 1871.

I did, but do not know what for, as no boats were running.

Do you know by whom it was drawn.

Do not.

Were there large quantities drawn.

Not very, I noticed it at different times.

Is it a usual thing to draw water from there.

Never saw it previous to last winter, except to keep it from breaking, but not when as low as last winter.

Do you think with proper care that the reservoirs could have been filled.

Could really not tell, but should judge that if the water had not been drawn, it would have been nearer full than it was.

Who took care of the reservoirs last winter.

I suppose Mr. Merrit; knew nothing to the contrary.

QUESTIONS BY LESSEES.

Was this water drawn at the culvert, or at the State Mill.

At the big culvert.

Were not the gates that let the water off from the reservoirs fastened and locked.

The culvert house used to be locked; have not been there of late years. I used to open and shut the culvert house.

Do you know where the keys of the culvert house were kept.

Old Mr. Baughman used to; I do not know now since he died.

QUESTION BY COMMISSIONER.

Did Mr. Baughman die previous to 1870.

He was dead before that.

B. BOWERS.

RODERICK J. MORRISON.

Age. 37 years.

Residence. No particular place; home on canal boat.

Occupation. Boatman.

How long and where have you boated.

On the Ohio canal, nearly 18 years; been off a part the time.

Were you on the Ohio canal when under the charge of the State.

Yes.

How many years.

Cannot tell; but the steadiest boating was while the State had the management.

When you were boating did the State keep the Ohio canal well bottomed out.

Did not see it, but did not have a great deal of trouble, with the exception of two or three times on Portage Summit.

Were the locks and lock gates in good condition at that time.

Some were and some not.

What was the tonnage of your boats then.

Worked on some carrying 50, 55, 60, 65 tons; don't know really the average.

What was the draft of water on 60 tons.

Cannot tell as I did not run them myself; heard them call it 3 feet of water.

How many years have you boated since '61.

Fall before last, (1870)

What is the tonnage of your boat now.

I have carried from 83 tons, 15 cwt, down to 68 tons; on the 83 tons, I was down 3 ft. 7 to 8 in. I carried from Massillon to Cleveland, in the fall of '70.

Do you have any trouble in passing boats.

Had no trouble with that load, or the whole fall.

Did you have trouble last season.

Not until the last, when the water got so low.

Are the locks and lock gates in as good condition now as previous to 1861.

Some in better condition, and some as bad. Under the State, we had trouble in opening gates; most of them are new now.

Do you ever see boatmen hitch horses to gates to open them now.

Don't know whether I ever saw any one do so. I did once when a part of a culvert was gone, or it was leaking so, I could not get it open; could not tell whether it was a stick of wood, or what was the trouble.

Do you know whether the water is any higher on the levels now than previous to 1860.

My idea is that it is, because our boats are so much larger and draw so much more water now.

How do you account for the increase of your tonnage.

The boats then were smaller; now we have larger.

QUESTION BY LESSEES.

Did you know of gates being opened by horse-power when the canal was under the management of the State.

Well I do not really know; I can not bring to mind any instance, but boatmen had the same reasons, then, as now.

R. J. MORRISON.

JOHN WARNER.

Age. 51 years.

Residence. Coventry.

Occupation. Farming.

Are you acquainted with the lakes and reservoirs which furnish the supply of water for the Portage Summit of the Ohio canal.

Yes sir.

Do you know of any water being drawn from the reservoirs in the winter of 1870 and 1871.

As for 1870, cannot say; in 1871 they drew water about this time (February 22) or a little before, I do not know how much nor how long, as it was none of my business; did not pay much attention and do not know how low.

Did you notice in the spring of 1871 how much the reservoirs lacked of being full, when navigation opened on the Ohio canal.

That I cannot tell, but I do know that it was not as near high water as generally before.

Was it a usual thing to draw water from the culverts in the winter previous to the time you have mentioned.

Could not say positively but not generally as I recollect.

QUESTIONS BY LESSEES.

You did not pay much attention to what was done with the waters of the reservoirs.

I did not; it wondered me that water was drawn; so many stumps in the reservoir, that ice blocked on them, which caused me to notice the water being drawn.

How far do you live from the big culvert.

About one and a quarter miles; do not live in sight of the reservoirs.

May the waters not have been drawn off in December 1870, instead of the latter part of the winter.

Can not tell.

JOHN WARNER.

HENRY A. WINKLEMAN.

Age. 48 years.

Residence. Coventry township.

Occupation. Farming, mostly.

Are you acquainted with the lakes and reservoirs which furnish the supply for the Portage Summit of the Ohio canal.

I am not much acquainted with them; I live at the race by the reservoir, but know what is going on about the water.

Do you know whether any water was drawn through the large culverts in the winter of '70 and '71.

Yes, the culvert was drawn then; how long or how late in the year, cannot tell.

Did this lower the reservoir much.

It went down instead of raising; there was no snow or rain to raise it.

Was it a usual thing, years ago, for them to draw water from this culvert.

Do not know much about that.

HENRY WINKLEMAN.

ELIHU McCAMAN.

Age. 40 years.

Residence. Coventry.

Occupation. Laborer.

Are you acquainted with the lakes and reservoirs which supply the water for Portage Summit of the Ohio canal.

I see them pretty much every day.

For how long a time have you seen them.

Two years.

How long have you lived in Coventry.

Twenty-three years.

Did you see any water drawn through the culverts in the winter of '70, and spring of '71.

I did.

For how long a time.

About six weeks, is my best judgment.

Was the reservoir lowered very much during the six weeks water was drawn.

It was considerable; cannot fix it in feet.

Do you know whether it was a usual thing to draw the water from these culverts.

Not unless the water is high.

Do you know how nearly full the reservoir was when navigation opened on the canal in the spring of '71.

It lacked about 18 inches, I should think, as I looked at it soon after navigation opened.

QUESTIONS BY LESSEES.

What time in the spring was it when you came to the conclusion that the reservoir was within 18 inches of being full.

About the 10th of April.

Why do you think it was about the 10th of April.

About the 1st of April I commenced to work on Stese's coal chute, and it being very rough, I had to walk around on the banks of the reservoir; could not cross with my boat.

Within how many feet of being full was the reservoir about the 1st of December, 1870.

I could not answer; it was low.

Within how many feet about the 1st of January, 1871.

Can not answer.

First of February, 1871.

Can not answer.

First of March, 1871.

Never measured, can not tell; do not know how deep it is.

First of May '71.

It might have lacked at that time, about 18 inches, as I said before.

How do you know it might have been about 18 inches of being full the 1st of May '71.

I had to walk around the reservoir; the lake being rough, so I could not cross with my boat.

Why do you say that it was January and February '71, that water was drawn through the culverts.

I have to go across the water by the culvert from my house to the big road; I commenced about 1st of January and continued about six weeks.

During what months did you go across the water to the big road.

Every month.

Did you go across there in December and November of '70.

Yes sir.

May not the waters have been drawn through the culvert in December '70.

Not to my knowledge; I did not see them if they were.

If you went over that water ever month in the year, how do you know it was January and February of '71, that you saw it running.

I never saw it run to my knowledge before, and it wondered me why it was drawn.

What time in January did you first discover the water running.

Long about the first.

ELIHU McCAMAN.

AKRON, March 23, 1872.

All of the within witnesses were called by the Lessees.

GEO. T. McCURDY.

Age. 46 years.

Residence. Akron.

Business. Canal collector and clerk in store.

How long have you been acquainted with the Ohio canal, and at what points.

Since 1845; at Akron, since 1855. I have partially been acquainted with it from Cleveland to Portsmouth, and particularly so from Newcastle to Cleveland.

What official position have you held on the canal; at what place, and for how long a time.

Collector of tolls at Akron, since 1855, on the Pennsylvania and Ohio canal, and on the Ohio canal since 1858, excepting two years.

State to what extent navigation has increased on the Ohio canal at Akron since the spring of 1861.

In 1861, there were 3,266 passes of boats through Akron locks. There has been a gradual increase till 1871, when the passes reached over 8,000.

State whether there has been an increase in the burden of boats, navigating said Ohio canal, since the spring of 1861, and what that increase has been in tons.

In 1861, boats would carry from 55 to 70 tons; now with ordinary run of water they carry from 70 to 85 tons.

State whether there has been any increase in the draft of water of such boats since the spring of 1861.

Boats can easily pass now, drawing three or four inches more of water than in 1861.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility, by the lessees, as at the time of the execution of the lease of the same.

It has been. The Lessees have been more diligent and thorough in making the general spring repairs; more prompt in removing obstructions, repairs breaks, &c., therefore the canal has been kept in better condition than it was in 1861. If the canal had been in the same condition it was in 1861, navigation would have been entirely suspended in the fall of 1871.

Have the Lessees at all times, when the season would permit, and the water was not unnecessarily drawn out of the said canal for repairs or new constructions, or when the same has not been obstructed by ice, or by reason of some unavoidable break of some structure of said canal, or other casualty on account of scarcity of water produced by drouth, kept the same in good and proper condition and repair for prompt, speedy and successful navigation, for all boat not drawing more than three feet of water.

They have, and with the exceptions named, they have put the canal in good condition for boats drawing three feet four inches of water.

How long were boats not drawing more than three feet of water delayed during the navigating season of 1871, by reason of the drouth.

If all boats had loaded no deeper than three feet, the detention would have not exceeded three weeks.

How long were such boats detained from other causes, and what were such causes.

Occasionally boat would be detained a few hours at a time in removing bars, raising sunken boats, making little repairs, &c. Cannot state the time definitely.

What was the cause of the interruption to navigation in the Ohio canal in 1871-2.

Scarcity of water was one cause; overloading boats was another.

At the time of the interruption, how much water were boats drawing, and what was done by the Lessees to get them off.

At the time of the blockade on Summit level, boats were drawing three feet four inches to three feet six inches. The Lessees employed six boats, including their own, to light up the heavy loaded boats to three feet draft. Boats drawing three feet of water had no trouble up to about the 14th day of October. At that time some boats were heavily loaded, would stick, and detain boats behind them that could pass, reasonably loaded; one boat overloaded would detain 20 others in one day.

State the severity of the drouth of 1871, in the vicinity of the Portage reservoirs.

It was the most severe that I ever knew it; we had eight showers of rain, sufficient for vegetation, but not enough, to fill the little streams and swamps that contribute largely to the feed for the reservoirs and Summit level; the swamps and ponds about the reservoirs, instead of being covered with water, as is usually the case, were perfectly dry in places where there is ordinarily three or four feet of water; in letting feed out of the reservoirs these dry places would take up an enormous amount of water, and have to be supplied before the water could reach Summit level.

State the number of lockages and the amount of water drawn from Portage summit during the navigating season of 1871; and how this compares with the ten years previous.

There were 14,300 lockages requiring 171,600,000 cubic feet of water, for locking boats in 1871, that would require during the 250 days of navigation 686,400 cubic feet per day, for lockage, independent of evaporation, leakage, &c. That was the largest demand upon the reservoirs and Summit level that I have ever known, (12,000 cubic feet per lock.) In 1861, the number of lockages was 6,500; the number has been increasing from that time to 1871, when it amounted to 14,300.

State in what condition the locks and lock gates were in the navigation season of 1871, as compared with the condition they were in when the canals were managed by the State.

In the spring of 1871, as is usual, the locks and gates were thoroughly repaired and put in better condition than when the Lessees took them in 1861. In the winter of 1860 and 1861 the legislature passed an act to lease the Public Works, and gave possession in June, 1861. The State neglected the spring repairs in 1861, and the Lessees took the canal locks and gates, in a worse condition than they have been any year since the execution of the lease, (referring to the month of June.)

State whether there was any greater wastage of water, during the year of 1871 in the Akron locks than before June 1, 1861.

There was much more water needed and used for navigable purposes, but comparatively there was less wasted, for the reason that extra pains were taken to prevent it. Additional men were employed to look to it and see that it was not wasted.

At what time did navigation close on the Portage Summit level, in the year 1870, and what amount of boating was done in December of that year.

Boats stopped passing over Summit that year December 23; over 400 passes of boats through Akron locks heavily laden in same month. It was one of the busiest months of the year.

State for what purpose the Portage Summit level was kept full and water drawn from the reservoirs during the month of December, 1870.

It was done to accommodate the Steese Coal Company, and other shippers for the purpose of navigation only.

Was there a sufficient fall of rain after the close of navigation in 1870, to fill the Portage Summit reservoirs, before the opening of navigation in 1871.

There was not.

State whether the Akron Mills had, or stole, any water from the Portage Summit level during the years of 1870 and 1871.

They have not bought or stolen any water from the Ohio canal except the material lockage during navigation; when navigation closed the locks were tightened with manure and saw-dust to prevent leakage, wrenches taken off the paddles, chains put across, and locked up so that no water could be drawn. During navigation an extra man was employed night and day when the regular lock tender could not attend to it, to keep watch of the lock, to see that the paddles were kept shut; that no water was wasted or used except what was actually needed to pass boats.

Why was the Portage Summit level full, during the month of January and February, of 1871.

The first of January found the level full from the previous month boating; after boats stopped running the locks were tighter, no water being drawn for boats, and none escaping from the level, except at the tumble at Herrold's Mill, together with the entire feed from the Tuscarawas running into the level, while the feeder race was being bottomed out, then

by keeping it out of the reservoir and the commencing of sawing at Beaver's saw mill first of January letting the water from his pond into the Summit. The nine mile level (Summit level) including Summit lake, Long lake, Mud lake, (or Nesmith lake) and other ponds, covering so large a surface that when once filled, and no boats moving, takes a long time to run down even an inch. The lakes and ponds mentioned are in the same level as the Summit.

How does the average term of round trip, during the time Lessees have had the canals, compare with the time required for the same before 1861, of the same class of boats.

There is no difference.

Have the short levels in Akron been drawn off more frequently since 1861 than before that time, and why are they drawn off at all.

Comparatively they have not; I have always, since my connection with the canals, frequently in the morning found the levels drawn off; the most frequent cause is carelessness of boatmen; they leave paddles to flood their boats out of the locks and over the levels, instead of drawing with their horses; sticks and stones get into the gates and paddles, so that they will not shut tight; some of the levels hold only two or three lockages of water and are drawn off in a few minutes; twenty boats will sometimes require as much water to pass the locks as forty will at another time; one way will require two locks for each boat, which would pass a boat going the opposite direction.

How many boats passed through the junction lock, to Pennsylvania and Ohio canal last year.

Seven hundred and seventy-five permits were granted, requiring twice that number of lockage of water from the Ohio canal.

QUESTIONS BY COMMISSIONER.

How has the tonnage of the Ohio canal been increased since the lease. It has been increased by boats drawing more water, and a more thorough bottoming out of the canal.

G. T. McCURDY.

WILLIAM MERRILL.

Residence. Akron.

Age. 51 years.

Occupation. Foreman on the Ohio canal, on section No. 2, between Deep Lock at Peninsula, and Wolf Creek Lock, including reservoirs and feeder, and have been in this capacity for the past eighteen years; have been employed by the Lessees on this section for the past ten years; have been acquainted with this division for 28 years.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the Lessees, as at the time of the execution of the lease of the same.

Yes, sir.

Have the Lessees at all times when the season would permit, and the water was not unnecessarily drawn out of the said canal for repairs or new constructions, or when the same has not been obstructed by ice, or by reason of some unavoidable break of some structure of said canal, or other casualty, or on account of scarcity of water produced

by drouth, kept the same in good and proper condition and repairs, for prompt, speedy, and successful navigation, for all boats not drawing more than three feet of water.

They have.

State in what condition the locks and lock gates were in the navigating season of 1871, as compared with the condition they were in when managed by the State.

In the spring of 1871, they were in just as good condition as at any time the State had charge of them.

State whether the east culvert to the Portage Summit reservoirs was open at any time during the months of January and February, 1871.

No, sir.

State whether it was open during the month of December, 1870.

Yes, sir.

For what purpose and how long was it kept open.

It was kept open through the month of December to keep boats running, and was closed about the last of the month or the 1st of January.

How long did it remain closed.

It remained closed until we had nearly exhausted the west reservoirs, until the 1st of July.

For what purpose was the feed turned off the reservoirs during the winter of 1870 and 1871, and how long was it kept off.

To repair feeder and bottom it out—was turned off two weeks.

State whether the Akron Mills had, or stole, or bought any water from the Portage Summit level during the years 1870 and 1871-'72.

They have not.

QUESTIONS BY COMMISSIONER.

How many new lock gates have been put in on your division in the past ten years.

About 19 pairs.

How do you bottom out the canal north of the Akron Summit.

By wheelbarrows and casting it out.

What time were you repairing the feeder.

Commenced about the 10th of January, 1871, and worked a week, quit a week for a snow storm, and then worked another week.

WILLIAM MERRILL.

SAMUEL FRY.

Residence. Akron.

Age. 31 years.

Occupation. Brick maker by trade; have boated most of the time for seventeen years, mostly on the south end of the canal; boated on this end of the canal last year.

What time last year, and what boat did you run.

I commenced at Massillon last season with the boat Mary Ann, and run her about two months on this end of canal. Then I took the Fanny Hawks about the 28th of July, and had her about three months; first

load from Massillon and the rest from Brewsters. Fanny Hawks from Massillon to Cleveland, except one load from Long Lake.

State how long it took to lock through the Akron locks in the spring of 1871.

Going out it took from three to four hours, and coming back from two to two and one-half hours, light.

State whether you were delayed during the months of April and May, 1871, by reason of defective lockage at the Akron locks.

Was not.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the Lessees, as at the time of the execution of lease of the same.

I think so.

How long were boats, not drawing more than three feet of water, detained by reason of the drouth, over the Portage Summit.

I think it was six or seven days that I was detained; I mean that the level was down, so that I could not load to three feet for that length of time.

State whether navigation was subject to more frequent interruptions during the navigating season of 1871, excepting from the lack of water during the extreme drouth, than when the State had management of the canals.

No, sir.

State whether boats of the same class during the time the Lessees have had the canals, make the same trip as speedily as when the State had them.

Yes, sir.

To what do you attribute the delays in boating, that usually have occurred since 1861-'62.

Break or low water, sometimes over-loading.

What was the smallest load taken by you to Cleveland during the year 1871.

About fifty-nine tons; boat Fanny Hawks run during the low water.

Where, if any, did you have any difficulty on the Summit level.

The longest time it took me was six hours to go over the level; we sometimes stuck on the mitre sill.

Is the water usually as deep on the mitre sill as on the level.

I think it was.

How heavily did you laden the Fanny Hawks during the time you navigated her last fall.

Heaviest load 74 or 75 tons.

How frequently did you make trips with her loaded to 74 or 75 tons.

Every five or six days, for the first two months, I run her from Massillon to Cleveland.

Could boats carrying 75 or 80 tons pass over the canal in 1860.

I do not know about this end, but they could not over the south end.

S. F. FRY.

THOMAS CUMMINS.

Residence. Akron.

Age. 34.

Occupation. Laborer.

State whether the eastern culvert of the Portage Summit reservoir was closed during the month of January, 1871.

It was closed all the time I was there; went then on the 10th of January and stayed until the following Saturday evening.

His

THOMAS X CUMMINS.

mark.

JAMES BRANNON.

Residence. Akron.

Age. 34 years.

Occupation. I have worked on the Ohio canal for lessees since 1861.

State whether the eastern culvert on the Portage Summit reservoirs was open during the month of January, 1870.

I was there two or three times during the month of January, and it was all tight.

What time were you at the culvert.

We went out on the 10th, and the third day after, I think, we worked down to the reservoir. Were there twice that week, and once the second week, when we worked; I was then in company with Mr Hillier, and saw him crawl into the culvert.

His

JAMES X BRANNON

mark.

WM. H. WHITE.

Age. 51 years.

Occupation. Superintendent of the Allen mills, for the past six years.

State whether any water has been taken by your mill from the Ohio canal except the ordinary lockage of the Junction lock during the years '70 and '71.

No sir.

QUESTION BY COMMISSIONER.

Would you be likely to know if any water was taken.

I think I should.

W. H. WHITE.

WM. A. PALMER.

Residence. Akron.

Age. 34 years.

Occupation. Proprietor of the Allen mills, a little over four years.

State whether the Akron mills have had any water from the Ohio canal except the ordinary lockage during the years, 1870 and 1871.

None that I know of.

Has any permission been authorized by you, to your millers to take any water from the Ohio canal.

No sir.

WM. A. PALMER.

JACOB HILLIER.

Residence. Akron.

Age. 25 years.

Occupation. Stillman, laborer.

State at what time you were employed on the feeder race of the Portage Summit reservoir, during the year 1871.

Commenced the 10th of January, and also worked the next ensuing five days; then we laid off a week on account of a storm to let all the water we could go into the feeder; then we commenced again January 23, and worked till January 28.

State whether the eastern culvert to the reservoirs was open or shut, during the time you worked on the feeder race.

It was shut all the time. The reason I know it was shut was, because I crawled up into it, and hollered to the boss above by the gate. There was no water in the culvert escaping.

Was the water turned into race when you suspended work at the end of the first week.

It was.

JACOB W. HILLIER.

BAKER DAVIS.

Residence. Portage township.

Age. 45 years.

Occupation. Miller, superintendent of City and Etna Mills in Akron; have been employed in that capacity 19 years.

State whether the Akron Mills had bought, or stole any water from the Ohio canal, during the years 1870 and 1871, except the ordinary lock-age of the junction lock.

They have not, to my knowledge.

B. DAVIS.

MASSILLON, February 23, 1872.

SYLVANUS CLARK.

QUESTIONS BY COMMISSIONER.

Age. 42 years.

Residence. Massillon.

Occupation. Carpenter.

Have you ever boated on Ohio canal.

I have.

At what time.

From 1850 to long about 1856.

Have you boated since.

About three years ago one summer.

From 1850 to 1856, between what points did you boat.

From Chillicothe to Cleveland.

What was the tonnage of your boat then.

About 70 to 75 tons.

What the draft of water.

Cannot tell exactly; about three feet and a little over.

Did you have any trouble in passing other boats on the levels at that time.

Do not recollect any, only this side of Bolivar in the cut; a loaded boat would have trouble.

Were the canals kept well bottomed out by the State at that time between Chillicothe and Cleveland.

I think they were.

Were the locks and lock gates in good condition at that time.

Yes they were, we never had any trouble.

Did you have to hitch horses to the gates to open them at that time.

Never recollect of so doing.

When you boated three years ago what was the tonnage of your boat then.

Sixty to sixty-five tons; a small boat, by name J. P. Burton.

What was the draft of water.

About two feet, eight inches.

Between what points did you boat three years ago.

Dover to Cleveland.

Did you have any trouble in passing loaded boats three years ago.

Yes, a great deal of trouble on Portage Summit, and on this level near Massillon, and on five mile level this side of Cleveland; do not remember any other point.

Were the locks and lock gates in as good condition as in 1850 to 1856.

No, they were not.

Did they leak more.

They leaked more three years ago than when I commenced; gates were harder to open.

Did you have to hitch horses to gates, three years ago to open them.

I did not.

Do you know whether the water is any higher on the levels now, than previous to 1860.

No, cannot tell anything about that.

Have you seen many men at work on the canal, bottoming it out, during the usual spring repairs, since the lease in 1861.

I have not seen any; only right here at Massillon, and a dredge down below Bethlehem, in that level.

Did you see many men cleaning out the canal at the time the State had it.

I did not, I was away most of the time in the spring when the State had charge.

Was the cribbing to the locks from '50 to '56, generally in good condition.

Yes.

Was it three year ago.

No, it was not.

QUESTIONS BY LESSEES.

What year was it that you last boated on the Ohio canal.
1869.

How much have you been on the Ohio canal since 1869.

Not any.

Where were you in '61, and how long did you stay away.

In the army for four years and three months.

You do not know whether the Lessees have bottomed out the canal or not since '61.

No.

How do you know the boat you run on the canal in '69, drew 2 ft. 8 in. of water when laden with 60 to 65 tons.

By our marks.

How much did she draw at 60 tons burden.

About 2 ft. 8 in. to 10 inches.

How much at 65.

A little over 3 feet.

What was the occasion of the trouble you had, with you boats in the season of '69.

Water was very low.

What caused the low water.

Cannot tell.

Do you wish to have it understood that you express any opinion as to the condition of the Ohio canal, except at the time you were navigating the same.

I know nothing except when on it.

RE-EXAMINED BY COMMISSIONER.

Was the low water in '69 caused by leakage of locks, or scarcity of water or the bottom of the canal filling up.

Bars in Portage Summit level, that we could not get over, being 24 hours in passing it. The locks leaked a good deal.

QUESTIONS BY LESSEES.

When in '69 were you delayed 24 hours on the Summit level.

Cannot tell the exact date, but in the fall.

How frequently were you hindered or delayed in passing over the Summit level in 1869.

Only once.

How many tons did you have your boat laden with at that time.

About 55 tons.

What sort of a dredge that you saw used by the Lessees in '69.

Steam dredge.

RE-EXAMINED BY COMMISSIONER.

How many places did you see the steam dredge used.

That was the only place.

SYLVANUS CLARK.

SETH C. McDONALD.

QUESTIONS BY COMMISSIONER.

Age. 61 years.

Residence. Massillon.

Occupation. Boatman.

Where and how long have you boated.

On the Ohio canal pretty much ever since it was built.

Was the canal kept and maintained in a good condition for navigation before the lease.

From the time the canal was built there were difficulties in regard to bars and obstructions more or less every year; the agents of the State endeavored to repair and keep the canal in good navigable order; there were times when we were laid up three or four weeks on account of large breaks, slides filling the canal, from the high hills on what is called the Pinery level. That was done up to 1857 or 1858, after that the State rather neglected the canal from that time until 1861; it was a good deal neglected and out of order when the Lessees took it in 1861; I think in the spring of 1861, the agents of the State did not draw off the water of the Ohio canal for repairs. Well, at that time, the canal was not in very good repair generally; when the Lessees took possession of the canal, they took possession of what was called the canal property, tools, &c.; after they got possession, they used a small hand dredge that the State had in case of bars or earth getting into the canal; they used those dredges to remove them. The canal was in such a condition that boats could not run with a full load; there were soon places that needed bottoming out, because so shallow, and they could not dredge it out with those little dredges; then they purchased two steam dredges I think, I do not know how many more; with those dredges, they have bottomed out and cut out the sides, making it wider and deeper. In other respects they have repaired the canal as the agents of the State used to.

Do you consider the canal in as good condition as at the time of the lease.

I could not say as to the southern part of the canal, the northern division from Roscoe to Cleveland is in a better condition.

QUESTIONS BY LESSEES.

State whether the Ohio canal has been kept and maintained in a condition of equal public utility by the Lessees, as at the time of the execution of the lease of the same, June, 1861.

It has.

State the average draft of boats when loaded to their full capacity, now navigating the Ohio canal.

I do not know, as I could judge boats that were running some ten or twelve years ago, did not carry as much as the modern built boats do now. Boats have run drawing three and one-half feet of water, a great many of them.

What draft of water did laden boats draw before 1861.

They did not load as heavily then; they generally did not carry within ten or twelve tons as much as they do now.

Were you engaged in boating over the Portage Summit during the boating season of 1871.

Yes, sir.

How many boats did you run.

I controlled three.

State in what condition the Portage Summit level was in during the boating season of 1871.

Fore part of the season, the stage of water was good, boats run over it drawing three feet two inches to three feet six inches; I do not recollect about what time the water failed, but think it was the 1st of October. Well, from that time the level run down for several weeks; there was a large amount of boats running on the canal at that time, business was very urgent, they had to commence loading lighter, there was some trouble in getting boats to load light; the Lessees put on the repair boats to light off, and many other boats were hired by the day to light off boats; they then gauged the boats to each end of the Summit, and then they could go on over.

State whether you experienced any more trouble since the lessees took the canal than when the State had it, in navigating the Summit level, except in periods of extreme drouth.

I do not think that there was any difference in the Summit level, in either case, until dredged by the Lessees, about three years since, and is now better; where it used to be the worst, is now better since repaired, than it ever was.

Do you know of any extra efforts made by the Lessees to furnish water for the summit level in 1871.

Yes sir. They in one case bought the water of a mill pond, and let it into the Summit level. They also got privilege to draw off a small lake, and got that water into the Summit; they cut a deep cut to get the water in. They employed extra men to stay there night and day to look after that level.

State whether the Akron levels have been more frequently run down during the time the Lessees have had them than the ten years previous thereto.

They have not.

State whether there was any serious difficulty or detention during the season of 1871 and before the extreme drouth of the fall of that year in locking through the Akron locks.

There was no detention whatever or difficulty, no more than usual every season for the last twenty years; last season there were a great many more boats than usual, which would cause a delay, when they were so thick.

In what condition were the Akron locks put in by the Lessees in the spring of 1871 as compared with the last twenty years.

In full as good condition as for the last twenty years, I know, for I went through them and they were in good order; so far as the leakage is concerned there is no lock on the canal but what leaks more or less; some of the Akron locks leak more than others, but not enough to be any detriment to the canal.

State whether these locks, as the season progressed, got out of repair more than usual, in 1871, as compared with the previous history of the Ohio canal.

They did not.

State whether you experienced any more difficulty in passing loaded boats since 1861, than before that time.

From 1861 to 1867 we had about the same difficulty in passing we had before 1861; since that time the canal has been improved by dredges, the narrow and low places have been dredged out so that the canal is in better

order, with the same boats and same loads that we carried previous to 1861; we would have but very little trouble now.

To what do you attribute the wedging of loaded boats since 1861.

For the last four or five years it has been by boats overloading.

Would boats only drawing three feet of water have any trouble in passing.

Not at all, I don't think they would have any difficulty whatever.

State whether the Akron Summit level, Wolf Creek level, Old Portage level, Yellow Creek level, Peninsula level and Pinary level, had sufficient depth of water except during the period of extreme drouth, to float boats not drawing more than three feet of water, and could not such boats pass as readily at all times, if properly managed, since 1860, as before that time.

They could pass as well as before.

If any trouble occurred in passing boats in the Peninsula level since 1861, state what caused the trouble.

Nothing new to make trouble, canal was narrow, so loaded boats could not pass, but that has been the trouble a great many years previous to 1861.

State whether the Aqueduct lock at Peninsula has leaked more since 1861 than it usually did before that time.

I think not, last season the lower gates at the north end of the lock leaked a little more than common the latter part of the season.

State whether you experienced any more difficulty in passing through the aqueduct lock last season, than since you navigated the Ohio canal.

Not any.

Explain what difficulties have usually attended the lockage of that lock since you were acquainted with it.

In locking through the Aqueduct lock south, the water is drawn from the level above to fill the lock, when the boat starts out of the lock; our modern boats fill the lock and aqueduct which is the same width as the lock. In starting out of the lock with a loaded boat the water has to be forced up through the aqueduct where the canal expands to give it room, and in towing out of the lock the vacuum behind the boat is so great that the water runs under and at the sides of the boat with a tremendous current; it becomes necessary to tow out of that lock very steadily indeed. In going out at an ordinary gait the pressure of the water in front causes it to stop and sometimes forces it back into the lock.

State whether this difficulty has always existed at that lock.

It has, ever since the canal was built.

QUESTIONS BY COMMISSIONER.

Have the Lessees put in as many new structures, and permanent improvements, as the State did not in the same number of years the the Ohio canal has been leased.

I think they have, and more too.

Mention some of the new structures the Lessees have put in.

The main part of the work has been lock gates. They have a house one-half mile below Massillon, where there is a ravine, and always have had since the canal was built, in case of heavy rains. A bar has washed in. Usually the water had to be drawn off to take the bar out; since the Lessees had it, they put in a sluice under the tow path, so that in case of

heavy rain, they hoist those flood gates and the gravel and sand passes through the canal into the river,

What did this cost.

Could not tell.

Was it very expensive.

The tow path to be cut clear through down to the bottom, probably 10 or 12 to 15 ft. deep, from the inside of the canal through tow path to the river.

How large and how long was the sluice.

Cannot tell exactly, should think from 10 ft. wide, 5 or 6 ft. high and 20 ft long, more or less, with gates covered over with dirt to form the tow path again.

Mention any other permanent improvements and new structures.

They have rebuilt the tumbles of some of the locks, where they were decayed; one at Bethlehem; don't recollect of any others in regard to tumbles. They have built new bridges for the tow path at the aqueducts.

How many aqueducts do you specify.

The aqueduct this side of Bolivar they rebuilt, and also a new bridge for tow path.

How long was this aqueduct at Bolivar.

I could not tell; maybe 150 ft. long.

Was it a wooden structure.

The trunk part was.

Were the abutments and piers rebuilt.

Repaired; but not rebuilt.

How many abutments and piers are there.

Two abutments, do not know whether one or two piers; recollect, after memory refreshed, two piers.

Any other new structures.

Rebuilt tow path bridge over Sugar Creek, near Dover.

How long was this tow path bridge.

About 150 feet.

What should you think would cost.

Cannot tell; a wooden structure, with bents and planked over.

Any other structures.

They rebuilt the aqueduct at Roscoe.

How long is this.

Cannot tell; it is a large, long and a high one.

Can you mention any other structures.

Tinker's Creek Aqueduct.

Is this a very lengthy structure.

That is a short one.

Have they put in many new lock gates.

They have a great many new ones.

Mention some of the places.

I don't remember; at Akron and below I saw from time to time new ones, but cannot tell how many.

Any this side of Akron.

Yes, at Wolf Creek Lock, at Clinton; there are two locks at Clinton; cannot say whether they put in all new gates; new gates in the lock this said of Fulton; at Bethlehem, and all along down the canal, there have been new gates put in; did not see them put in.

In the places mentioned, what gates were put in, the upper or lower.

In most cases, both or full sets.

Do you know of any more structures put in or improvements made.

Not that I saw, but some more made; they have taken from Massillon cinders above and below to repair tow path and prevent breaks.

How far above and below Massillon have they repaired the tow path with cinders.

Below here, seven, eight, or ten miles, at different places, some 100 feet long, more or less; a large quantity at Navarre, where the river washes the tow path away, and at different points above, as far as Fulton, scattered along, they have taken cinders and slate and made the tow path permanent.

Was the Portage Summit level full when navigation opened in 1871.

The water was in good condition for ordinary boating, drawing from three feet to three feet six inches.

Were the Portage Summit reservoirs full in the spring of 1871.

I dont know, of my own knowledge.

Do you know anything about the management of the reservoirs in the winter of 1870 and 1871.

I dont, of my own knowledge.

How do you know that the Lessees hired many other boats to light over the Summit.

I was at Akron some three or four weeks during the low water; I had three boats there a part of the time, going through to Cleveland with loads on.

What length of time and how many boats.

By the day; don't recollect how many days; saw the superintendent hire them; about four or five, I think.

How much of the Summit level was dredged out previous to 1871.

About two-thirds of the level.

When and where did the Lessees buy a mill pond, and let it into the Summit level.

They bought the water of a mill power, in October, back of Long Lake, south or south east I should think from the canal.

How much water did this furnish.

I could not tell how much, it filled the canal up many days and assisted the boats that were stuck, along over.

Of whom did they buy this water.

Do not remember the name.

How many days did this fill the canal.

I think about a week it kept the canal in a better stage than before, then it ran down lower than ever.

What lake did they drain.

I don't recollect; a pond that had no outlet.

How long did it take to make the cut from this lake to the canal.

Do not know.

How much water did this furnish.

Could not tell.

How many men and what length of time were they employed to watch the Summit level day and night.

Cannot tell how many, they were there about three weeks more or less, part of the time, altogether 12 or 13 men employed assisting the boats over, and watching the water at each end.

How many hours did it require to lock through the Akron locks in 1871.

Fore part of the season as quickly as ever; never timed one.

You are sure of that.

Yes, went back and forth many times.

Did not the Akron locks in a month after the spring repairs, leak as badly as they did in 1870.

I think not as badly as the fall before.

Did you not often in the fore part of the season of 1871, find the Akron levels run down.

I did not.

At how many places have the steam dredges worked on the northern division of the canal.

Below Trenton there were levels where the water was low and hard towing from 1850 to 1865; the dredge has dredged a great portion of some of those levels. This side of Trenton, there was a narrow and shallow place in the canal, since before 1850, to the time the Lessees had the steam dredge, making it passable for full loaded boats. On almost every level, there has been a great deal of work done on the ten mile or Bolivar level, here on the Massillon level; this end of the level was always in bad condition; they have dredged it several times, both sides, making it in good navigable condition; two and a half miles north of Massillon, there is a stone quarry which filled up the canal, that has been dredged out; the Fulton level at this end was very narrow and shoal, what we call hard water, that has been dredged at different points on that level, more or less. The dredge has been taken from time to time through the canal where it was needed, and the shallow places dredged out.

How many steam dredges on the canal between Trenton and Cleveland.

Only one.

Is this constantly in operation.

I believe not, the ice has been so heavy this winter, I have heard from the superintendent at times that it could not work, otherwise it is kept in continual operation.

Has the water been raised on the levels since 1860.

No, sir.

What means have you for knowing.

I have examined the tumbles and waste weirs, and they are built of stone, and they have not raised or lowered a half an inch since 1860, no obstructions have been put on the waste weirs and tumbles by the Lessees.

What do you mean by boats being properly managed.

Boating is a trade, and experienced boatmen will manage boats in a way that they are not obstructing the navigation of the canal of other boats. It is proper for the boatman to have his tow line and snub his boat, and it is proper for him to at night to moor his boat, so other boats can pass.

Were you employed by the Lessees in 1871.

I was a short time.

In what capacity.

I was appointed inspector of boats.

Are you in their employ now.

No, sir. Have not been since the close of navigation last fall.

Did you watch Lock No. 1 of the Pennsylvania and Ohio canal any nights in the fall of 1871.

Yes, sir.

Why did you watch the lock.

To prevent any one drawing water.

QUESTION BY LESSEES.

Have the Lessees failed or neglected to make any proper repairs or reconstructions that have been ordered by the Board of Public Works, or any engineer appointed by them, if so, state wherein said neglect or failure consists.

I never knew of the Board of Public Works, or their engineers, giving them any orders.

QUESTION BY COMMISSIONER.

What means have you of knowing any thing about the orders of the Board of Public Works, or their engineers.

I have not any.

S. C. McDONALD.

ADAM MILLER.

QUESTIONS BY COMMISSIONER.

Age. 38 years.

Residence. Newcomerstown.

Occupation. Boatman.

Where and how long have you boated.

Ohio canal since 1850. Part of the time from Cleveland to Portsmouth; in 1853, I was master of a boat, the Patriot.

What was the condition of the locks and lock gates previous to 1860.

Pretty good condition.

Were the canals at that time kept pretty well bottomed out previous to 1860.

They drew off the water in the spring, bottomed out some, cleaned out the bars and repaired the locks.

In ordinary stages of water, did you have any trouble in passing boats previous to 1860.

Yes, we did.

What was the cause of the trouble.

The canal was too narrow in some places for two loaded boats to pass.

Do you know whether the water is any higher in the levels now than previous to 1860.

I do not.

Was the canal before 1860, kept in a proper condition for navigation. It was for boats carrying 1,800 to 2,000 bushels of wheat, from Chillicothe and Circleville to Cleveland.

Was the tow path kept in good condition at that time.

I believe it was.

Has the canal been kept in good condition since the lease.

Yes.

QUESTIONS BY LESSEES.

State the average tonnage of boats navigating the Ohio canal previous to 1861, and what is the average tonnage now.

Used to carry from 1,800 to 2,000 bushels of wheat, which was con-

sidered a good load; we load now 2,200 to 2,300 on my boat, which is an ordinary sized one.

Have you been constantly engaged in boating on the Ohio canal since 1850.

Yes, I might have been off some, but have had an interest.

How many boats do you own now.

Two.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the Lessees as at the time of the execution of the lease of the same.

I believe it has.

State whether the Lessees have been prompt in making needed repairs, since they have held the same.

They have and more so than before the lease; could rely upon their fixing a leak and taking out bars.

Have the Lessees at all times, when the season would permit and the water was not necessarily drawn out of said canal for repairs, or new constructions, or when the same has not been obstructed by ice, or by reason of some unavoidable breach of some structure of said canal or other casualty, or on account of scarcity of water produced by drouth, kept the same in good and proper condition and repair for prompt, speedy and successful navigation by all boats not drawing more than three feet of water.

They have.

Were the waters of the Ohio canal drawn off for spring repairs during the spring of 1861.

I believe they were not; the water was left on.

RE-EXAMINED BY COMMISSIONER.

How do you form your opinion that the canal has been kept and maintained in a better condition since, than before the lease.

They have dredged out places where we used to stick and could not get along, and carry larger loads now, with the exception of the dry time.

How have you been enabled to carry larger loads since, than before the lease.

On the four mile level, at Trenton, we used to stick very hard with a load of 1,800 to 2,000 tons; the lessees dredged that out; we used to have a great deal of trouble there, as it was gravel, and hard to get off from when we stuck.

Do you know what caused the low water on the Portage Summit in 1871.

No more than the drouth; they claimed not enough rain to fill the reservoir.

Do you know how those reservoirs were managed during the winter of 1870 and 1871.

I do not.

A. MILLER.

WM. CASTLEMAN.

QUESTIONS BY COMMISSIONER.

Age. 45 years.

Residence. Massillon.

Occupation. Lumber trade, at present.

Have you ever boated on the Ohio canal.

Yes.

At what time, and how long.

If I remember correctly, from 1848 to 1867, on Ohio canal.

Between what points.

Principally between Massillon and Cleveland; occasionally clear through to the river.

What was the tonnage of your boats previous to 1860.

Sixty to sixty-five tons.

What was the draft of water.

Three feet; there is a difference in the bearing of boats.

Were the locks and lock gates, previous to 1861, generally in good condition.

At the opening of navigation they generally were. I found them frequently out of repair; they were, as far as I know, partially repaired each spring by the State.

Previous to 1861, was the canal kept well bottomed out.

Partially so; bars and shoal places, and dirt were cleaned out.

Was the canal of sufficient width for two loaded boats to pass, previous to 1861.

Not at all points.

Specify where not.

Loaded boats would be delayed at Circleville level, numerous places this side, and from Portage Summit level to Cleveland.

State more definitely the places.

Bolivar level; about one-half mile south of Bethlehem; about one mile north of Rochester; here at Massillon; opposite Mr. Bayliss' foundry, on Wolf creek level; this side of Summit Lake, and beyond Akron, at old Portage level. If I could give you all the places where I have been detained and blockaded, it would be a thousand.

Does this answer apply to any time since 1861.

Yes, that part of the time better than the fore part.

Was the canal at the Bolivar level of sufficient width, previous to 1861, for two loaded boats to pass.

It was, except at one or two different points, when bars come in; at Bethlehem, a stream comes in, causing bars, and boats had a great deal of trouble in passing.

Was the canal, at one mile north of Rochester, of sufficient width for two loaded boats to pass, previous to 1861.

They could pass, drawing three feet of water.

Was the canal at Massillon, opposite Mr. Bayliss' foundry, of sufficient width previous to 1861, for two loaded boats to pass.

I think they could, drawing three feet of water.

Was the canal at Wolf Creek level of sufficient width, previous to 1861, for two loaded boats to pass.

Yes, drawing three feet of water.

Was the canal on this side of the Summit Lake of sufficient width, previous to 1861, for two loaded boats to pass.

Only at certain times and at certain places.

What times were they, and at what places, could they not pass.

Generally when the water was shoal, grassy season of the year, and where it was subject to bars.

Specify the points where you could not pass, previous to 1861, on this portion of the Summit level.

From the railroad bridge, south of Summit level, to the Pottery, about a fourth or half a mile, a point at sand bridge, north of Summit Lake.

Was the canal of sufficient width on old Portage level, previous to 1861, for two loaded boats to pass.

Boats loaded as they should, could pass; that is, to 3 feet, in my opinion. The great difficulty has been, in my opinion, in boats navigating the canal, and being detained, the want of discipline on the part of boatmen; for the last ten years, to my knowledge, there has been no restrictions on the part of boatmen whatever. In general, there has been as much water of late years as 15 or 20 years ago, except where bars washed in, and it had not been bottomed out; an empty boat could hardly pass sometimes. For instance, here at the railroad bridge, the canal fills up at certain times, and has to be dredged out.

Do you think the canal has been kept in as good repair since the lease as before.

No, sir.

Do you know whether the water is any higher on the levels now than before 1861.

It is higher, I think, on most of them; the bottom is higher, also.

EXAMINED BY LESSEES.

What makes you think the water higher on the levels now than before 1861.

I don't think they have been bottoming out the canal, for several years past, as much as usually did in years past; so that the canal has eventually been filling up, and the levels being raised.

How have the levels been raised.

By filling the tow path up in places, putting on plank at waste weirs, and plank at lock tumbles.

State where lock tumbles have been raised since 1861.

Cannot say when or where, except the water is raised, which it could not do unless plank was put on the lock tumbles; also the waste weirs. I am referring to the Massillon level, for I notice it more than any other of late.

State what the level of the tumble was of the Massillon lock in 1861.

I have no means at this time, of knowing the amount of water in 1861; there was water enough at that time for boats to pass and run on; this level had at usual stage of water, no difficulty.

What is the level of the tumble of that lock now.

I don't know.

Do you know how much the Massillon level has been raised since 1861.

I do not.

How much has the bottom of the Massillon level been raised since 1861.

Cannot tell.

What repairs were put upon the Ohio canal by the State in the springs of 1860 and 1861.

Nothing more than drawing the water, cleaning out the bars, and perhaps taking out the stone, which would roll in from embankments, and sand and dirt.

Was the water drawn off from the Ohio canal at all, for spring repairs in 1861.

If I remember correctly, I think it was, but cannot tell positively.

Were as extensive and thorough repairs put on the Ohio canal by the State in the years 1859, 1860, and 1861, as usual before that time.

I do not think they were so good and thorough.

Has there not been difficulty navigating the Ohio canal from want of water, defective lockage and want of repairs, generally, ever since you were acquainted with the same.

There has been.

To what do you attribute most of the difficulties you have enumerated in navigating the Ohio canal.

Former part of my experience the difficulty was, in bars and breaks on the canal; the latter part has been, by leaking locks, levels running down, bars being made in canal; and would only say, further, by boats overloading.

Explain what difficulties resulted from overloaded boats.

Blockades, and detaining each other from navigating, from passing and repassing, where they would have little or no difficulty, if they were drawing the proper stage of water, that is, three feet.

Do you know what draft of water boats usually draw at this time, when laden with from 70 to 85 tons.

From three feet to three feet six inches; I mean our best class of boats.

What for the other class of boats.

Five feet; some of them put on 85 tons; on most of the boats on the canal, there is hardly water to be found to float them.

At what time since 1861 has there not been water enough on the Ohio canal, except in seasons of extreme drouth, to enable boats not drawing more than three feet of water to readily run the same.

No season that I know of, except in 1871, at the Akron Summit.

RE-EXAMINED BY COMMISSIONER.

Have the canals been kept and maintained in a condition to be of equal public utility by the Lessees, as at the time of the execution of the lease of the same (June 1st, 1861).

No, sir.

Do you know that the water in the Massillon level has been raised.

It has been raised materially in the last 20 years, but cannot state to what extent.

Are not the boats of a better class and greater capacity now than previous to 1860.

A portion of them

Can the same boats which were running previous to 1861, carry any greater load now than then.

No, sir.

Were there any repairs made to the Ohio canal, in the spring of 1861.

If I remember correctly they drew the water, cleaned it, and repaired locks as usual.

QUESTIONS BY LESSEES.

Have not the Lessees, with the exceptions of times of extreme drouth, not kept the Ohio canals in such condition as to furnish convenient and prompt navigation of boats not drawing more than three feet of water.

They did.

Can you name any tumbles that have been raised since 1861 by the Lessees.

I cannot state that any have been permanently.

WM. CASTLEMAN.

ROBERT MYERS.

QUESTIONS BY COMMISSIONER.

Age. 37.

Residence. Massillon.

Occupation. Boatman.

Where, and how long have you boated.

Commenced in 1865, from Massillon to Cleveland.

Were you acquainted with the canal previous to 1865.

No.

What is the condition of the locks and other structures.

Some good, and some not.

Are they as good now as when you commenced boating.

Yes, about the same thing.

What is the name of your boat.

Amboy.

In ordinary water, do you have any trouble, in meeting other boats, on any of the levels from Massillon to Cleveland.

Depends upon where I meet them; if we get into a narrow place, and see another boat coming, I have to hold on until you come to a wide place.

Has this been every year since 1865.

The last two years it has been better; since the dredge has been up here, they have dredged out place for us to pass.

On what levels have they dredged places.

On the Bolivar level; a great deal of dredging done on Summit level; cannot recollect distinctly; it has been through the Akron locks, and and dredged some below Lock 1.

What year did you first see the steam dredge upon the canal.

Cannot recollect exactly; think it was 1868, if not mistaken.

Has the canal, since you have been upon it, been kept well bottomed out.

Middling in places; as good as we could expect.

Should not the levels of the canal be of sufficient width at all places for two loaded boats to pass.

It would be a great deal handier, and save a great deal of trouble.

Since you have been upon the canal, has the tow path been kept so as to drain the water which would fall upon the tow path from the canal.

Yes, in most places.

Have you noticed the tow path particularly in that respect.

I ought to, for my team is on it every day in the summer season.

What do you mean by most places.

Some places are so low that the water runs over, when the level raises.

Will half the tow path from Massillon to Cleveland drain from the canal.

It will.

Do you consider the canal in good condition for boating.

I do, when there is plenty of water I have but little trouble with my boat, and I carry 70 to 75, and sometimes 83 tons. In the fall of 1870, I carried in ten loads, from Massillon to Cleveland, at an average of 82 tons each.

When you have plenty of water, how deep is it over the mitre sills.

I cannot tell; never measured. I noticed some old boats, loaded down three and one-half feet, get over the mitre sills.

Did you consider the Akron locks last year, or 1871, in good repair. Middling; some of them leaked considerably.

Did you not often find the levels at Akron run down in 1871.

Yes, because the water was scarce, and some locks leaked pretty badly.

Was that scarcity of water, owing to drouth, or leakage of locks.

Both.

QUESTIONS BY LESSEES.

When and how frequently did you find the Akron levels run down.

Cannot tell the day, week or month; but in 1871 more so than any other season; off and on, boats would come along and draw off the levels.

Did this often occur before the extreme drouth of the latter part of 1871.

It has sometimes occurred, but not so often as in 1871, because boats coming up were loaded too deep, drawing the water.

How deep did these boats load.

I have seen boats come out loaded to three feet, three inches.

Have not the Lessees at all times, when the season would permit, and the water was not necessarily drawn out of said canal for repairs or new constructions, or when the same has not been obstructed by ice, or by reason of some unavoidable breach of some structure of said canal, or other casualty, or on account of scarcity of water, produced by drouth, kept the same in good and proper condition and repair for prompt, speedy and successful navigation by all boats not drawing more than three feet of water.

If they would not load any deeper than three feet the canal would be right enough.

RE-EXAMINED BY COMMISSIONER.

Did you draw three feet of water at all times last year.

No, not during the dry season.

How much did you draw during the dry season.

The last trip I took to Cleveland, I drew, strong, three feet; then I lay on the Summit level 14 days; would not go into Cleveland any more, because I could not carry a load to pay; so I boated ore south; this last trip was sometime in October.

Were you restricted to any less depth than three feet.

Yes, was ordered to go less; we had to go less or we never could have got over.

To what depth were you restricted.

Two feet ten inches, and afterward two feet four inches.

Why were you restricted to less than three feet.

So as to cause no detention to other boats.

What caused them to give you this restriction.

So that we could all get along and keep boats going during low water.

What caused the low water.

Dry season, I suppose; not certain, as a great deal of water leaked off.

Do you know whether the water was properly cared for, to supply the reservoirs at the Portage Summit for the season of 1871.

Cannot tell, exactly.

Then you do not know whether it was entirely the dry weather that caused the low water.

I do not.

QUESTION BY LESSEES.

Was it not unusually dry during boating season of 1871.

It was in 1868; I think we had a dry season, and scarcity of water.

ROBERT MYERS.

EDWIN BAYLISS.

Age. 39 years.

Residence. Massillon.

Business. Manufacturer of agricultural implements, and dealer in pig iron.

You may give a general statement of your business as a dealer in pig iron.

My first transaction was about the year 1858; have dealt in it since then, constantly. My purchases have been from about 300 to 1,800 tons per annum; aside from that, I have handled on commission, for other parties, from 50 to 2,000 tons (as an approximate estimate); last year, 1871, I handled not to exceed 50 tons. I think I could have handled an average of 2,000 tons, for myself and others, had the canal been in good navigable order, all the time. This would be a fair average judging from the business done heretofore. The chief shipping points are Portsmouth, Chillicothe, Logan, Athens and Cleveland. My last load of iron, by canal, May 24th, 1870, by my books; none in 1871, by canal.

Have you, previous to 1870, received much on the canal.

Yes sir.

Would it be any advantage to you and other shippers, to have the canal south of Massillon in good condition.

Yes sir.

Were boats only drawing three feet able to navigate the canal south of Massillon to Portsmouth in 1870.

Not to my knowledge, after May 24th.

Did you make any efforts to obtain pig iron, shipped via the canal after May 24, 1870.

Yes, sir.

Were you successful.

No, sir.

Did you try during the season of 1871.

Yes, sir.

How did you obtain your iron.

By rail.

Can you obtain iron by rail, delivered at the foundry at Massillon at the rate of freight you formerly did by canal.

No.

State the difference.

\$4.15 is the difference between a boat load of May 24th, and the last receipts by rail, making a difference of over \$8,000 on my ordinary business of former years.

EDWIN BAYLISS.

NICHOLAS AIGLAN.

Age. 39 years.

Residence. Massillon.

Occupation. Foreman on this section of the canal, from Bolivar aque-
to the Old Portage, on the Summit level, since May, 1863.

QUESTIONS BY LESSEES.

State how long you have been acquainted with the Ohio canal, and over what parts you have been so acquainted.

I have been acquainted with the canal as long as I can remember, and have worked since 1847 or 1848; from Roscoe to Trenton, until 1852; was away until 1857; from then to the present time, except a few months. From 1856 to 1861, I worked from Roscoe to Bethlehem lock; since then I have been more or less acquainted with the Ohio canal from Roscoe to Akron. In 1857 I worked on the Walhonding canal.

Have the Lessees been as prompt and thorough, in making needed repairs as was the State when it had charge of the canal.

Where I have been they have been more prompt and more thorough than the last three or four years the State had it.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility, by the lessees, as at the time of the execution of the lease of the same.

I think it has been better, where I am acquainted with the Ohio canal.

Have the Lessees at all times when the season would permit, and the water was not necessarily drawn out of the said canal for repairs or new constructions, or when the same had not been obstructed by ice, or by reason of some unavoidable breach of some structure of said canal, or other casualty, or on account of scarcity of water produced by drouth, kept the same in good and proper condition and repair for prompt, speedy and successful navigation by all boats not drawing more than three feet of water.

They have.

State whether more delays have been occasioned by reason of; loaded boats being unable to pass each other since the Lessees took the canals than before.

I think not.

State whether the locks have been kept in as good state of repair by the Lessees as the State.

Better than the last few years the State had it.

Has there been any time since the Lessees took the canal, that boats not drawing more than three feet of water could pass over readily that portion you have known.

No time except fall of 1871.

Has there been any time since the Lessees had them, that boats not drawing more than three feet of water could not pass over that portion under your charge promptly.

No time except on the Portage Summit.

What draft of boats would usually pass over that portion under your charge.

From three feet to three feet eight inches, have known them to draw more, but nor generally.

QUESTIONS BY COMMISSIONER.

Have the Lessees been more thorough in making repairs than the State did three years before the lease.

They have.

In what manner have they been more thorough.

In repairing locks and gates, and general work.

How many lock gates have been put in.

A full set at the two Massillon locks, in 1862; a full set at Fulton lock; two Clinton locks, full sets; a full set at Wolf Creek; rebuilt stone quarry lock in 1863, wing walls and upper recess; cut off the face of the main chamber of the lock; it was too narrow. It had been difficult for boats to pass for the last three or four years the State had it; put in one pair of gates at the same time, and new mitre sills, Bolivar aqueduct was rebuilt, also; rebuilt Bethlehem lock, wing walls and recess; rebuilt the Fulton lock in 1866, built new on one side, and one wing wall, and relaid the upper two courses of stone; entire new cribbing at lower end of lock; we built the walls so as to require cribbing. In 1868, set of new gates at Bethlehem lock; one pair of upper gates at Fulton lock; put in two pairs of gates since; Clinton lock, one pair long, and the other short gates; in 1871, one pair at Wolf Creek, short ones; in 1871 rebuilt a bridge at Wolf Creek dam; also, built new change bridge at Bolivar aqueduct; new bridges across the Tuscarawas at Clinton, in 1868; a new sluice or culvert, at one and a half mile south of Massillon.

State why the canal has been kept and maintained in a better condition since than previous to the lease.

When the State had it they did not appropriate money enough to keep it in repair; was not repaired for the last three years the State had it.

How do you repair the locks now.

The masonry on my section is in good repair and needs no attention. Gates, if they are out of repair, I put in new ones.

Do you keep the canal well bottomed out.

A great deal better than when I first came here. I do not know as I have done any more work of late years than when I first came here. It was in very bad condition when I first came here. My instructions were to do my work well.

Have you repaired any of the tumbles and waste weirs to the levels.

One tumble at Bethlehem. I also rebuilt the tumble at stone quarry lock, when I rebuilt the lock.

How deep does the water stand over the mitre sills in ordinary stages.

From three feet ten, to four feet.

N. AIGLAN.

SAMUEL HOSLER.

QUESTIONS BY COMMISSIONER.

Age. Thirty-two years.

Residence. Massillon.

Occupation. Boatman.

Where, and how long have you boated.

Since 1861, principally between Massillon and Cleveland, on the Ohio canal.

What is the name of your boat.

C. N. Oberlin.

What is the tonnage of your boat.

About 70 tons.

The usual draft of water.

About 3 feet 3 inches to 3 feet 4 inches.

Do you have any trouble in passing other loaded boats on any of the levels.

Not when we don't load more than 3 feet.

Were you ever stuck on the Summit level with less than three feet.

Not that I know of.

How often did you go over the Summit level.

Twice a week, once each way.

Were you not restricted to less than three feet in 1871.

Yes, ordered to load 2 feet 4 inches.

Why were you ordered to load two feet four inches.

On account of the drouth, I guess. Low water and no rain.

Do you know whether the water was properly saved to supply the reservoirs at Portage Summit on Ohio canal.

No, I do not.

Then you do not know whether it was dry weather which caused the low water on the Portage summit or not, last year.

It was the dry weather.

How do you know that it was the dry weather.

We never had any trouble before on the summit.

Do you know whether the reservoirs were full at Portage summit last spring, when navigation opened.

I do not.

Did you often find the Akron levels run down since 1861.

Not often, sometimes by a boatman leaving a wicket open the level would run off.

Did you have any trouble with the locks last year from Massillon to Cleveland.

Several locks leaked some.

Were you not detained at the Akron locks, nearly every trip last season.

Only once, gates were broken.

Any trouble at the Aqueduct lock at Peninsula.

It leaked some; when a crowd of boats got there, they were detained if loaded too deep.

Did you often hitch horses to gates to open them last year.

No, don't know as I ever did.

QUESTIONS BY LESSEES.

How deep did those boats load, which you said were loaded too deep. Three feet six inches, and some more than that.

Have not the lessees, at all times, when the season would permit, and the water was not necessarily drawn out of said canal for repairs or new constructions, or when the same had not been obstructed by ice or by reason of some unavoidable breach of some structure of said canal, or other casualty, or on account of scarcity of water, produced by drouth, kept the same in good and proper condition and repair, for prompt, speedy and successful navigation by all boats not drawing more than three feet of water.

I think if the boats would not load more than three feet they would not be detained, except such a time as last fall or a break.

RE-EXAMINED BY COMMISSIONER.

Do you consider that the locks and gates are in a proper condition for a prompt, speedy and successful navigation of the canal.

As I stated, some are not at present in good condition, and some are; the locks in the spring when we started were in good condition, but in the fall more or less leaked as they always do and did.

Have they been kept so at all times since you have navigated the canal.

They have in the spring, they were always put in good condition.

Did you ever wedge on any of the levels when only loaded to three feet.

Don't know as I have.

QUESTIONS BY LESSEES.

How deep do you usually load your boat.

With lumber from two feet ten inches, to three feet one inch; with coal, from three feet two inches, to three feet six inches.

Were you in the habit of passing over the Akron Portage Summit, with boat loaded with coal.

Yes, with all kinds of grain and merchandise.

RE-EXAMINED BY COMMISSIONER.

Has the tow path been kept in good condition all the time you have boated.

In tolerable good condition.

How should the tow path be, to be in good condition.

It should be wide enough and descend away from the water.

Has it been thus kept.

Cannot say it is all, but the greatest part is thus kept.

Have you not often been detained at the Portage Summit and Akron locks.

Not very often until fall of 1871, that was account of the low water.

SAMUEL HOSLER.

Draft of water drawn by boats passing over the Ohio canal, at the locks at Clinton, going north, between May 14, 1871, and July 11, 1871; being indifferently taken or selected at such times as the lock tender could conveniently make the scale.

Date.	Tons.	Name of Boat.	Date when weighed.	Bow, midship, draft		Stern, mid-ship, draft.	
				ft.	in.	ft.	in.
1871.							
May 14	72	Boston	May 17	3	4	3	4 $\frac{1}{2}$
	75	Newark	" 17	3	3	3	2
	76	Scout	" 17	3	3	3	2 $\frac{1}{2}$
	72	Chas. Benton	" 17	3	2 $\frac{1}{2}$	3	1 $\frac{1}{2}$
15	72	D. W. Cross	" 17	3	3	3	2 $\frac{3}{4}$
	70	Energy	" 17	3	2 $\frac{1}{2}$	3	2
	73	Georgetown	" 18	3	3	3	3
	71	Diadem	" 18	3	2	3	1 $\frac{1}{2}$
16	73	C. H. Clark	" 18	3	2 $\frac{1}{2}$	3	1 $\frac{1}{2}$
	72	J. L. Walton	" 18	3	4	3	3
	68	Vitula	" 18	3	1	3	
	75	Amboy	" 18	3	2	3	3
	75	Whippoorwill	" 18	3	4	3	4
	70	L. Waltzer	" 18	3	2	3	1
	67	Volunteer	" 18	3	1 $\frac{1}{2}$	3	1
	69	Sacramento	" 18	3	2	3	1
17	69	D. M. Niswonger	" 18	3	2	3	2
	71	A. W. Wynett	" 18	3	3	3	4
	74	Adolphus	" 18	3	3	3	2
18	74	H. H. Little	" 22	3	4	3	4
19	71	Pilot	" 22	3	4	3	5
20	73	Iowa	" 22	3	5	3	4
	72	S. Cove	" 22	3	4 $\frac{1}{2}$	3	3 $\frac{1}{2}$
	74	Signal	" 27	3	4	3	4
	69	Sherman	" 22	3	4	3	3
	77	O. Stafford	" 22	3	6	3	5
	67	J. P. Burton	" 22	3	3	3	3
	74	Atlanta	" 22	3	4 $\frac{1}{2}$	3	4
	71	Pearl	" 22	3	4	3	3
	75	Sego	" 23	3	6 $\frac{1}{2}$	3	6
	71	H. S. Davis	" 25	3	7 $\frac{1}{2}$	3	6
23	71	Cavalier	" 31	3	3	3	3
	76	Amboy	" 26	3	3	3	3
	72	Lilly	" 26	3	3	3	2 $\frac{1}{2}$
	70	Buckeye Boy	" 26	3	3	3	2
	71	Paragon	" 26	3	3 $\frac{1}{2}$	3	3
	73	Sacramento	" 26	3	3	3	2 $\frac{1}{2}$
24	68	Active	" 26	3	2	3	3
	68	Col. Jarvis	" 27	3	4	3	3
	73	Forest	" 27	3	4 $\frac{3}{4}$	3	3 $\frac{1}{2}$
	72	Lévi	" 27	3	3	3	3

Draft of water drawn by boats passing over Ohio canal—Continued.

Date.	Tons.	Name of Boat.	Date when weighed.	Bow, midship, draft.		Stern, mid-ship, draft.	
				ft.	in.	ft.	in.
1871.				ft.	in.	ft.	in.
May 24	73	H. H. Little.....	May	27	3 4	3	4
	71	Superb.....	"	28	3 4	3	4
	70	Naiad.....	"	28	3 3	3	2½
	72	J. W. Grey.....	"	28	3 4¾	3	3
	69	Clayton.....	"	28	3 5	3	4½
25	72	Myrtle.....	"	28	3 4	3	4
	64	D. M. Niswanger.....	"	29	3 4½	3	4½
		Mazeppa.....	"	29	3 3	3	3½
	71	H. Coit.....	"	29	3 3	3	3
26	69	Iowa.....	"	29	3 3	3	2½
	65	H. Eckman.....	"	29	3 3	3	2½
	69	Fannie Hawks.....	"	29	3 3	3	2
	70	Phil. Sheridan.....	"	29	3 3	3	2½
	73	Wheeling.....	"	29	3 3	3	2
27	71	Sego.....	"	29	3 4½	3	3
	74	O. Stafford.....	"	30	3 5	3	4½
	70	Atlanta.....	"	30	3 4½	3	4
	71	Rollo.....	"	30	3 4	3	3
29	70	Joe Stanley.....	"	31	3 3	3	3
	74	Whippoorwill.....	"	31	3 6	3	6
	67	Waucosta.....	"	31	3 3	3	3
30	71	Diadem.....	June	1	3 3	3	2½
June 4	76	O. Stafford.....	"	12	3 6	3	5
6	73	L. Walzer.....	"	12	3 5¾	3	4½
	70	Paragon.....	"	12	3 4½	3	3½
22	72	Commander.....	"	24	3 3	3	4
	72	Harvest.....	"	24	3 4	3	3
	67	Yorktown.....	"	26	3 3	3	2
		Champion.....	"	26	3 3	3	2
	72	Sea Breeze.....	"	26	3 3	3	3
	72	Frank Block.....	"	26	3 6	3	4
	72	Little Willie.....	"	26	3 2½	3	2
	72	Iron Valley.....	"	26	3 4½	3	4½
	73	Phil. Sheridan.....	"	26	3 4½	3	4½
23	68	D. Smart.....	"	26	3 4	3	3
	74	Georgetown.....	"	26	3 4½	3	4½
	70	Sarinac.....	"	26	3 3	3	2½
	72	C. H. Clark.....	"	26	3 4	3	3
	62	Maine.....	"	26	3 2	3	1
	69	Orange.....	"	26	3 3	3	1¾
	69	A. Coit.....	"	26	3 3	3	1¾
	73	Diadem.....	"	26	3 4	3	4
	65	Peninsula Mills.....	"	27	3 4½	3	4
	71	Com. Perry.....	"	27	3 4	3	4

Draft of water drawn by boats passing over Ohio Canal—Concluded.

Date.	Tons.	Name of Boat.	Date when weighed.	Bow, midship, draft.		Stern, midship, draft.	
				ft.	in.	ft.	in.
1871.				ft.	in.	ft.	in.
June 23	76	Wheeling	June 27	3	2 $\frac{3}{4}$	3	3
	71	C. N. Oberlin	" 27	3	3	3	3
24	74	Fannie Hawks	July 1	3	4	3	3
	63	Eclipse	" 5	3	3	3	2 $\frac{1}{2}$
	66	A. Henderson	" 10	3	3	3	3
28	79	Trent	" 5	3	3	3	3 $\frac{3}{4}$
	64	W. H. Smith	June 30	3	3 $\frac{1}{2}$	3	3 $\frac{3}{4}$
30	71	Sea Breeze	July 4	3	4	3	2 $\frac{3}{4}$
	75	Hornet	" 7	3	5	3	4
	70	J. L. Walton	" 1	3	4	3	3
	71	J. Jacobs	" 3	3	3	3	4
	71	Atlanta	" 4	3	4 $\frac{1}{2}$	3	3 $\frac{1}{2}$
July 1	63	Eclipse	" 5	3	1 $\frac{1}{2}$	3	1
	73	Signal	" 3	3	5	3	4
	72	R. H. Nugen	" 5	3	3	3	2 $\frac{3}{4}$
	71	H. J. Kinsley	" 5	3	3	3	2 $\frac{1}{2}$
	.....	Levi	" ..	3	2	3	1
2	75	A. Swan	" 5	3	3 $\frac{3}{4}$	3	3 $\frac{3}{4}$
	71	J. R. Buchtil	" 4	3	4 $\frac{1}{2}$	3	4 $\frac{1}{2}$
7	65	Davis	" 6	3	2 $\frac{1}{2}$	3	1
	67	U. S. Grant	" 10	3	3	3	2 $\frac{3}{4}$
	68	North Dell	" 10	3	2	3	2
	64	Carondolet	" 11	3	3 $\frac{1}{2}$	3	3
	70	J. Jacobs	" 10	3	3 $\frac{1}{2}$	3	1 $\frac{1}{2}$
8	72	Fannie Hawks	" 11	3	3	3	3
	71	Signal	" 11	3	3	3	1 $\frac{1}{2}$
	64	Rainbow	" 12	3	3 $\frac{1}{2}$	3	3 $\frac{1}{2}$
	71	Sea Breeze	" 13	3	3 $\frac{1}{2}$	3	3 $\frac{3}{4}$
	68	Resolute	" 12	3	3 $\frac{1}{2}$	3	3
	73	Forest	" 12	3	5 $\frac{1}{4}$	3	4 $\frac{1}{4}$
	.....	Champion	" ..	3	3	3	3
9	66	Napoleon	" 13	3	1	3	2
	74	Wheeling	" 13	3	1	3	1
	62	W. H. Smith	" 13	3	4	3	3
10	68	Naomi	" 13	3	3 $\frac{1}{4}$	3	3
11	68	S. Cove	" 13	3	3 $\frac{1}{4}$	3	3
	71	Paragon	" 13	3	3	3	2
	68	J. P. Burton	" 13	3	5	3	3 $\frac{1}{2}$

MARQUIS L. HOAGLAND.

Age. 29 years.

Residence. Clinton, Summit county.

Occupation. Bock tender.

State whether you were lock tender at the Clinton Locks during the boating season of 1871.

Yes, sir.

State whether you kept a register of draft of water of boats, from the 14th of May, to the 11th of July.

I kept a register of part of the boats; some would pass when I was away up the canal, or in the night.

Is the paper hereto attached a correct record of the boats as measured.

It is.

MARQUIS L. HOAGLAND.

[In justice to Mr. Hoagland we would say that the foregoing list of boats are the same as he testified to as gauged by him, but the weights were furnished by the weigh master at Cleveland, the weights are not sworn to].

NEWARK, February 29, 1872.

SAMUEL GALLOWAY.

QUESTIONS BY COMMISSIONER.

Age. 33 years.

Residence. Newark.

Occupation. Am engaged by the Lessees in superintending the Public Works from Lockburn to Roscoe, on the Ohio canal and the Walhonding canal.

How long have you been superintendent on this division.

Since the middle of last June.

Was this division navigable for boats drawing three feet of water last season.

No, the time I came they had suspended navigation through the Licking Summit on account of the scarcity of water in the reservoir.

You know nothing of the condition of this division of the canal previous to the middle of last June.

No, never had been here before.

Except the scarcity of water, was the canal in good order for navigation last year.

Yes, so far as I knew.

Are the locks all in good condition.

The locks on this division are all in good condition.

QUESTIONS BY LESSEES.

State whether the Licking Summit reservoirs are in proper condition to save all the water which naturally flows into it.

Yes, they are.

From what points on your division has there been sufficient water

during the season of navigation since the middle of June last, for boats drawing not more than three feet of water.

From Newark north except a short time, when I first came here, there was trouble at the Black Hand dam caused by a bar at the lock; that was remedied very soon, do not remember how long; remedied by putting gravel on the dam. We took the dredge, and took this bar out making seven or eight feet of water; with that exception the canal has been in good navigable order since I came here.

State the cause of the scarcity of water in the Licking Summit reservoirs.

On account of the drought; no water flowing in.

S. GALLOWAY.

O. T. BROWN.

QUESTIONS BY COMMISSIONER.

Age. 37.

Residence. Newark, for the last 28 years.

Occupation. The last four years in the grain, seed and produce business; been a shipper the last three or four years.

Have you noticed the shipments on the canal.

Yes, for the last three or four years; did not know much previously.

In this time has business increased or diminished on the canal.

Only know regarding my own, have never been a through shipper much. What little shipping I have had has not been trouble, except for want of water this last season.

Do you think that the business on this portion of the canal would warrant any large expenditure of money to put it in better condition.

I think not; everything that is offered is readily taken; its present size affords sufficient facilities if it is kept up to the present standard.

Except the scarcity of water has the canal, furnished facilities for shipping the past three or four years.

Yes, it has.

Is there much produce shipped from this point by rail.

Yes, a great deal.

Does the railroad take business away from the canal.

It does; if the railroad was not here, everything would go by canal. I have shipped but one boat load of wheat through since I have been in business, for the last three or four years.

QUESTIONS BY LESSEES.

To what do you attribute the scarcity of water.

To the want of rain.

State the extent and severity of the late drouth.

I think not a thorough soaking rain for two years; the creeks have not been up for that time.

QUESTION BY COMMISSIONER.

Is there much interest felt in the canal.

Only by coal shippers; the grain dealers have only a local trade on the canal. We ship what comes here from the local trade to Pittsburgh, Baltimore, Philadelphia and New York City; even our shipments to Coshocton are by rail, as they have made freight only 3 6-10 cents; by canal from Millersport to Newark 3 cents a bushel only 14 miles. The distance from here to Coshocton is about 40 miles.

O. T. BROWN.

S. S. WELLS.

QUESTIONS BY COMMISSIONER.

Age. 34 years.

Residence. Newark.

Occupation. Since 1864, I have been collector here; before that, was in the coal and grain business, and have kept that up until last year.

Have the tolls increased or decreased since you have been collector.

Last year my tolls on coal were more than the year before. On grain, the last two years, not so much as formerly, on account of want of water. Trade from the south has decreased; clearances from this office are through to Cleveland, and for the want of water have decreased. The grain trade from Millersport to Newark has increased, Millersport being this end of the deep cut.

If there was sufficient water, do you think the business would increase on this portion of the canal.

Yes, I do.

QUESTIONS BY LESSEES.

State whether boats cleared from this point to Cleveland make the round trip as speedily as when you first engaged in the coal and grain business.

As far as I recollect, I know of only two instances when they made the trip direct in 1871, and they made the round trip in 14 days. I do not recollect of any trip, since I have been collector, made in less time. One trip was made in July, some time in 1871; the other about the same time.

How heavily were these boats laden.

One with about 2,100 bushels of wheat: boat called Yorktown; the other was loaded with 2,200 bushels shelled corn; have forgotten the name of the boat.

QUESTION BY COMMISSIONER.

Could boats, drawing three feet of water, run to Cleveland from here, except when limited to two feet four inches, on Portage Summit.

Yes.

QUESTION BY LESSEES.

Was there any time, last year, when boats drawing not more than three feet of water, could not readily pass from this point north on this division.

No.

S. S. WELLS.

JOHN FITZGERALD.

QUESTIONS BY COMMISSIONER.

Age. 32 years.

Residence. Newark.

Occupation. Engineer or machinist, am now employed on the steam dredge No. 2, by the Lessees of the Ohio canal, and have been for about four years.

At what places on the Ohio canal have you worked.

Commenced at the Walhonding canal at the six mile dam; dredged about a mile, at Roscoe; a part of the canal, at Adams' mills; made several passing places from there to Licking dam; some places dredged twice, at the neck of the canal where it fills up; one-fourth mile of the canal below Newark; then the north fork feeder over two miles, about four feet cutting; one-fourth mile in Newark; deep cut at Millersport, over a mile, excavated from four to five feet in places, others two feet; two passing places on the Boswell level. Was a part of two years on the Hocking canal; made several passing places from Carrol to Lockburn. Dredged on the Columbus side cut.

Are you not employed a large portion of the time in the summer season, in making passing places.

We make passing places only as we go along; we make two a day while at work. We have done considerable dredging at Lockburn; also on the Columbus side-cut, at the junction with the Ohio canal, as it filled up there from a freshet.

Is the dredge at work most of the time.

Yes, except when broken down, and in extreme cold weather; this is the first winter we were ever obliged to lie still. We did considerable dredging twice at Millersport.

How many yards can you take out in a day.

Calculate to excavate 1,000 yards; there are places where it falls under sometimes 100 yards if stony; never found anything in the canal but what we could dig; we can take out in depth from three to ten feet.

You have only dredged in a few places in the canal compared to its length, have you.

No, I dredged twice at north fork feeder, and the other dredge twice, I believe. I have only given what my dredge has done on this division. The dredge went on to the Licking Summit and the Walhonding when I was off in the summer. Where I did the most of the dredging was between Circleville and Portsmouth; the first year the principal part of my work was on the Hocking canal. I cannot recollect all the places but can furnish an account, of the work, if desired.

JOHN FITZGERALD.

COSHOCTON, February 28, 1872.

SAMUEL GARDNER.

QUESTIONS BY COMMISSIONER.

Age. 48 years.

Residence. Roscoe.

Occupation. I have been collector for the last eleven years, and lock tender and water regulator on the feeders for ten years.

Has the business decreased or increased on the canal.

Should think, as a general thing, there is not so much business now as the year I commenced.

Is there much pig iron shipped from the south.

Yes, usually when the elements do not forbid. Two years ago this winter, we had a great deal of rain, since then not much.

What are the feeders here.

The Walhonding river; the one mile dam; the six mile dam; the Tuscarawas, 32 miles above at Trenton; all flow into the ten mile level at Roscoe.

Was there much pig iron shipped from the south previous to 1869.

Yes, a great deal; boats would load for the south, and bring back iron.

For the last two years has there been sufficient depth of water in the canal for boats drawing three feet of water.

Not in the deep cut; from here to Dresden, plenty for three feet; from there they lock up to Licking Summit. I only know this from hearsay.

Has business increased or decreased on the Ohio canal for the last ten years at this point.

In the fall of 1863, I think, we had a heavy grain trade; shipped nearly 120,000 bushels of wheat; the year following, I do not think it would go to 10,000; my tonnage book would tell. I think more money was received the first five years than the last five years.

Do you know anything of the amount of tolls received here previous to 1860.

I have no means of knowing except pencil marks on old books, from 1840 to 1850.

How much business was there done on the Walhonding canal.

Not much; the corn is not shipped, it is fed to hogs; they are driven to the railroad and shipped.

Has the Walhonding canal been in a condition the past ten years to furnish facilities for boats.

There was a time that there was not, owing to the filling up of the six mile lock, to the river, about 300 yards, caused by sediment. It was on a level with the river, that would float boats, no guard lock, and it could not be got out except by dredge; a sluice has been put in now which will forever guard against filling up, by raising the gates it will take the sediment into the river below the dam.

Did this low water occur every year under the lease until they used the dredge.

I suppose it would, there used to be trouble about half a mile below at Dorsey bar, ever since the canal was built. The lighter sediment would float down so as to impede navigation. The dredge boat made excellent navigation, the best on that level.

Was there sufficient water to navigate the Walhonding canal last year.

There was; there was not an hour but what boats could go, except on account of a bar for a short time in the spring.

Are these locks and lock gates in good condition.

Do not know from personal knowledge, there has been no complaint; I will say this, that when there have been bars, the repair boat has lighted boats over. I have put planks across the dam and helped boats over the bar between six mile lock and the river.

Was the Ohio canal on this sub-division in good condition for navigation last year.

Yes, boats would have no trouble going from Roscoe to Dresden drawing three and one-half feet of water. The new aqueduct at Roscoe has five inches more water at the bottom than formerly.

QUESTION BY LESSEES.

State whether the round trip is made from here to Cleveland in the same time as in 1861.

It is, night and day boat ; takes about eight days.

SAMUEL GARDNER.

C. STAHL.

QUESTIONS BY LESSEES.

Age. 34 years.

Residence. Navarre.

Occupation. Boatman for 18 years. Mostly from Navarre to Cleveland, occasionally been to Portsmouth and Cincinnati ; carry wheat from here to Cleveland.

State in what capacity you have boated, and how long.

Have run a boat of my own for 13 or 14 years.

State what sort of cargoes you have carried from here to Cleveland.

Wheat and grain.

State what was the usual loads during the last two years of your boat from here to Cleveland.

Two thousand to two thousand three hundred, and other way freight along.

State the heaviest tonnage and when you carried it from here to Cleveland.

Two thousand four hundred bushels of wheat, (72 tons,) in June and July, 1870 and 1871, and all along every year except the last of last season, when it run down to 1620 bushels, did not want to bother with unloading at the Summit, I loaded so as to get along. My boat is the J. G. Warwick, and I have run it four years. I had it built.

State from what point south have you navigated this canal, since you run the Warwick.

In 1870, from here to Newark and from there to Cleveland.

State how much tonnage.

I carried 2330 bushels of wheat, from Newark to Cleveland, in the latter part of July, I think.

State whether in ordinary stages of water the ten mile level, (just below Navarre,) had sufficient water in it to furnish prompt and speedy navigation of boats not drawing more than three feet of water.

I never saw any trouble unless they were overloaded. A three foot boat and more can go right over there without trouble.

State what has been the cause of boats sticking fast at the Bethlehem bridge, and at the mouth of the Limestone creek, just below Isaac Hawks.

At the Bethlehem bridge, a gutter runs in and makes a bar every time there is a freshet. I did not see any boat stick there last season. At Limestone creek there was no trouble last summer ; they dug it out ; boats would run along and get too far over on the bar, and be too heavily loaded and then stick. If they would keep in the channel would be all right.

State whether the ten mile and Navarre levels, have occasioned more difficulties or obstructions to navigation since the Lessees had the canal than before.

I do not see any more trouble than before; the Lessees have made passing places with the dredge where we could not pass before. I never stuck drawing three feet to three feet two inches; passing right along, running night and day, with a double set of hands; never had assistance from any other team. Was ordered the last of season of 1871, to load to two feet four inches, on account of the drouth.

QUESTIONS BY COMMISSIONER.

Is the model of the Warwick exactly the same as the one you ran before 1860.

A little difference; this is a better model; a first class boat, though the same kind.

Will it carry more load than the other at the same draft of water.

It will; I can carry from ten to fifteen tons more with my present boat, at the same draft of water; other boats being smaller, they load them down deeper to make them carry a larger load than formerly.

What is the width of your boat.

I think 14 feet, a deck boat.

How much water should a boat drawing three feet have, for prompt and speedy navigation.

It would run right along on three feet six to three feet eight inches; they have, as a general thing, that much, from six to eight inches to spare, drawing three feet, in most places.

Was there sufficient water running in Limestone creek to make bars there last season.

There was a rush of water there but it did not effect the canal to my knowledge, they dug it down deep, so that it held the ground, and did not wash into the canal.

As a boatman are you satisfied with the canal as managed by the Lessees.

Yes.

How much of a channel has this Ohio canal.

Do not know how wide.

What constitutes a canal, ready for prompt, speedy and successful navigation of the same.

When we have plenty of water, as years before, I can make a round trip to Cleveland in four days, running day and night. We have landmarks on the canal by which we can tell where the passing places are; sometimes one boat has to hold on for the other; we can pass in most places.

Is it not a fact that most of the tow path slopes into the canal.

Do not know that it is all so; a pretty good tow path from here to Cleveland.

Can you carry more of a load now than before 1860 with the same boat.

We take heavier loads.

Why are you enabled to carry heavier loads.

Because we have larger and heavier boats.

If you had the same boat could you carry any larger load.

No, that is to travel right along.

C. STAHL.

NAVARRE, February 26, 1872.

ISAAC HAWK.

QUESTIONS BY COMMISSIONER.

Age. 57 years.

Residence. Bethlehem.

Occupation. Farmer.

Are you acquainted with the Ohio canal.

My house is right on the canal.

Have you ever boated on the Ohio canal.

No; I used to own the water mill at Navarre.

How long have you been acquainted with the Ohio canal.

In April it will be 40 years.

Have you frequently passed over the Ohio canal.

Yes, many thousand times, probably; run the water mill about sixteen years.

When the State had charge of the Ohio canal, did they keep it well bottomed out and the locks in good condition.

No, sir.

To what time do you refer that it was not well bottomed out and locks in good repair.

Cannot tell precisely when it was leased, but just before it was leased it was in a bad condition.

Can you state the number of years it was in bad condition.

Cannot. When Mr. Patten was Superintendent, in 1850, it was in good condition.

Was he Superintendent after 1850.

Cannot tell; some time after; cannot say when he quit.

Was it in good condition before 1850.

Yes.

Is the water any higher now on the levels than when Mr. Patten was Superintendent.

It is lower on the level; I live on what is called the ten mile level, from Bethlehem to Bolivar.

How much lower is it.

Should think from six to twelve inches; it varies.

What is the cause of the variation.

Cannot tell; but I know it is so, from seeing the water even with a log on the side of the road leading to my farm in the mud.

Have you ever measured the water on the mitre sills.

No sir.

At the time the State had charge of the canal, could boats pass on the levels without any inconvenience.

Part of the time they could, and some of the time could not; towards the last of the time there was considerable trouble.

Since the lease, has there been any trouble.

Yes a great deal; have heard the boatmen complain, and have seen boats stick in the spring when the water was first in the levels, from the start. Below town I have seen boats stick, five and six accumulate there, then splice teams, so they could draw over the shallow places.

Since the Lease, has this portion of the canal been bottomed out.

I think not; they generally take out the bars.

Have you ever seen the dredge working in this portion of the canal.

Yes.

Do they take the bars out with the steam dredge.

They take out the roughest bars when the water is drawn off; after that the dredge comes through and takes out the worst places.

Do you know the draft of boats.

Cannot tell exactly.

Do you know the tonnage.

When I shipped, from 1846 to 1860, boats carried from 2,000 to 2,200 bushels of wheat, or 60 to 66 tons.

Do you know what they carry at the present time.

Only know as I hear from the boatman.

Have you seen as many loaded boats on this portion of the canal since as before the lease.

I think not quite so many as formerly.

Do you think, if the canal was in good condition, there would be as much business on it as formerly.

I should think so.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the Lessees as at the time of the execution of the lease of the same, June 1st, 1861.

My opinion is, it is growing worse all the time. Last season boats could not go along, with anything of a load, without sticking.

What was the trouble last season.

Cannot tell; the water seemed low. In June the level was full; in May it was run down. After four or five weeks in June, the water ran down, and they did not get the level up, only for a day or two when it rained.

Have they as much trouble years before as since the lease.

Yes, more or less.

Are the locks kept in good condition since the lease.

Cannot answer that.

QUESTIONS BY LESSEES.

Over what portion of the Ohio canal have you been acquainted since 1860.

Have not been over much; only those two levels at Navarre.

Did not boats stick fast on the ten mile level before 1861.

They did.

State whether it was exceedingly dry during the boating season of 1871.

It was.

Wherein have the Lessees failed to keep and maintain the Ohio canal in a condition of equal public utility as at the time the lease was executed on that part of the canal with which you are acquainted.

The reason, I think, is, that when they clean out in the spring, the weather is bad, and they do not have men enough, and when the time comes they let the water in, whether it was cleaned out or not; you might say it was not cleaned out at all.

Is there any other respect in which it is not as well maintained.

Not that I know of.

Has there been any time, since the lease was executed, except in periods of extreme drouth, when the canal was not cleaned out in the spring so as not to furnish sufficient depth of water for the prompt and speedy navigation of boats not drawing more than three feet of water.

Cannot tell what a boat will draw with a load on; but saw trouble with boats when there was no drouth. For the last four or five years the canal has not been cleaned out, I should think so as to furnish navigation for boats drawing three feet of water.

Excepting in periods of extreme drouth, what depth of water has there been on the ten mile level.

Cannot tell.

How can you then tell that it did not furnish water sufficient for boats drawing three feet of water.

The reason is, that I saw so many boats stick when there was no drouth.

Did not these boats stick on a bar that forms after heavy rains at the mouth of a small creek that runs into the canal at that point.

I think not so much there, as at both sides of the bar. They stick on the canal, at my place of residence, and down below. One place they stick is at the Bethlehem bridge; another 200 yards below the mouth of the creek.

How deep did the State keep the water on the ten mile level.

Could not say; do not know.

What work was done by the State making spring repairs in 1861.

Cannot answer.

What repairs in 1860.

Cannot say.

In 1859.

Cannot say.

In 1858 and 1857.

Cannot tell, as I do not remember about those dates.

What repairs were made by the Lessees in 1862.

Cannot tell; except for the last few years, the Lessees had some hands at work taking out some of the worst bars.

What was the condition of the Ohio canal in the spring of 1861, at the time it went into the hands of the Lessees.

I should not think it was in very good condition then.

Explain wherein it was not in good condition.

The reason, I judge, it was not, I would see boats stick in 1861, and before; they would stick at the bridge, and have to draw water from the level above. I would sometimes find it half drawn off to help the boats off the bar at the bridge, in the morning when I came to the mill.

QUESTION BY COMMISSIONER.

Did you call last season one of extreme drouth.

The latter part of the season we called extreme drouth.

QUESTION BY LESSEES.

What do you mean by saying that you have been over the Ohio canal many thousand times.

I mean crossed over it.

ISAAC HAWK.

CANAL DOVER, February 27, 1872.

JESSE UPDEGRAFF.

QUESTIONS BY LESSEES.

Age. 34 years.

Residence. Canal Dover.

Occupation. Boatman, ever since 1849, except four summers.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the Lessees as at the time of the execution of the lease of the same (June 1861.)

Yes, I think it has.

State whether boats not drawing more than three feet of water have had any serious difficulty navigating the Ohio canal since the Lessees had the canal between Dover and Cleveland.

Not until last fall.

To what do you attribute the delay in boats navigating these waters in ordinary stages.

Bad boatmen; there are no boatmen as there used to be; they overload their boats, and that detains other boats.

State whether there have been any more serious difficulties in navigating the Boliyar level and the Navarre level under the Lessees than when the State managed them.

No, not so much so; before the Lessees had it, it was always a drudge. The Lessees put a dam across Sandy creek; since that the level has been good. I don't just mind when they put the dam in; shortly after the Lessees got it.

To what draft of water do boats usually load that clear from this point to Cleveland.

From three feet to three feet four and five inches.

State whether the Lessees have made needed repairs as promptly and thoroughly as the State.

Yes, they have.

QUESTIONS BY COMMISSIONER.

Why do you think the Ohio canal has been kept and maintained in a condition to be of equal public utility since the Lease than before.

Because I have boated under both, and know that locks are in better condition and most of the levels are better.

What draft of water did you draw before the lease.

Loaded with 2,000 bushels of wheat; draft two feet ten inches; boats run then for time; now for a heavy load. Then we hardly ever loaded to three feet.

Have the Lessees increased the depth of water in the canal.

Most of the levels have more water in now than before the lease; they have not raised the tumbles or mitre sills.

How have they supplied more water.

By making stronger feeds.

Have they built any new feeders.

They built a new one at Sandyville, and repaired others, and made them stronger.

What four years were you away from the canal.

From 1862 to 1866.

Were you not often detained in navigating the canal in 1868.

Yes, by overloaded boats, and meeting in narrow canal, where we could not get by.

How wide should the canal be.

Do not know exactly how it should be.

Should it be of sufficient width for two loaded boats to pass.

There are a few places where boats cannot pass, never did, and probably never will.

What is the length of the boating poles now.

From eight feet to thirty feet; the long one for river poles.

What do you use now.

From 16 to 18 feet on the canal.

With the same boat can you carry any greater load now then before the lease.

Yes, you can, for there is more water to carry it in.

Have the locks been as well repaired since as before the lease.

They have been better.

At the time of the lease, how long did it take you to lock through the Akron locks.

From four to six hours.

How long does it take now.

The last boating I did, from two to three hours.

When did you do your last boating.

In 1870.

Were you on the canal in 1871.

No I was not.

At what points did you work on the State boat.

From Trenton to Bolivar aqueduct.

What distance.

Twenty-five miles.

How many hands did you have with you.

First three months, five men; the rest of the time, four men.

Did you do all the spring repairs from Trenton to Bolivar aqueduct.

No, there were two or three men at Bolivar and three or four more here; do not remember exactly.

Did you know anything about the canal from Bolivar aqueduct to Cleveland last year.

Nothing from personal knowledge.

Are you employed by the Lessees.

Yes, was last year.

Did the dredge do any work last year from Trenton to Bolivar aque-

Yes.

At what points and how much.

Worked two weeks below Lockport on the two mile level, and the Trenton level about three weeks I guess; here in Dover at the collector's office about two days.

Did any boats come up here from Hebron last year, drawing three feet of water.

Could not say.

Did any the year before.

Cannot tell positively as I did not boat that way then.

Did any come up in 1869.

Cannot state, was not down that far.

Previous to 1871 as a boatman, were you satisfied with the canal as managed by the Lessees.

Yes.

QUESTION BY LESSEES.

State whether the canal was any narrower or had any more places where loaded boats had any more difficulty in passing since 1860, than previous to 1861.

No.

QUESTIONS BY COMMISSIONER.

How were you enabled to pass the Akron locks in two or three hours in 1870.

Because the locks were tighter and levels full; could go right along through.

Was there much boating in 1870.

Yes, from these coal banks to Cleveland; from above not much till the latter part of the season.

His
JESSE X UPDEGRAFF.
mark.

THOMAS WEST.

QUESTIONS BY LESSEES.

Age. 43 years.

Residence. Canal Dover.

Occupation. Superintendent on the canal for about nine years, on subdivision number four, between Trenton and Bolivar.

How long have you been acquainted with the Ohio canal.

I believe 16 or 17 years.

Have you been employed on the Ohio canal that time.

Yes, mostly.

How were you employed before you were Superintendent.

In doing the carpenter work and repairing the locks.

State whether the Lessees are as prompt and thorough in making the needed repairs, as the State when it had charge of them.

Yes, a great deal more so.

Have the Lessees at all times, when the season would permit, and the water was not necessarily drawn from the Ohio canal, for repairs or new constructions, or when the same has not been obstructed by ice, or by reason of some unavoidable breach of some structure of the same, or other casualty, or on account of scarcity of water, produced by drouth, kept the same in good and proper condition and repair, for prompt, speedy, and successful navigation by all boats not drawing more than three feet of water.

Yes, it has.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the Lessees, as at the time of the execution of the lease of the same.

Yes, it has, better than before they got control of it.

QUESTIONS BY COMMISSIONER.

How many tumbles and waste weirs are there from Trenton to Bolivar. Twelve tumbles and waste weirs, with the exceptions of the slack water dam.

Have any of these tumbles or waste weirs been raised since the lease.

No, they have not.

How many men do you employ on your division.

Five or six during the summer.

How many men during spring repairs.

I get all I can from thirty to forty, maybe more, cannot tell exactly.

How much of the tow path in your division, slopes from the canal.

Should think half, some places where it never sloped out.

What is the proper width of the canal for prompt and speedy navigation.

Forty-five feet on the top.

What on the bottom.

Twenty-six feet.

What depth of water.

Three feet six inches

Are there not many places on this division, where the width, top and bottom is less.

There may be a few places in the deep cuts, which have always been narrow since I have known the canal; some of these have been dredged out.

What was the condition of the canal on this division when leased.

The wood work of the locks was in very poor condition, stone work was better, not quite so bad as the wood work; with few exceptions, the banks are much better now than before the lease.

Could boats at that time navigate the canal drawing three feet of water.

Yes, I suppose they could.

What is the condition of this division at the present time.

We repaired the Sugar creek dam, rebuilt the bridge twice, rebuilt two locks, Stone Quarry and Jones Lock; built a large dam upon the Sandy, for a feeder, that comes into Bolivar. The dam that was there when the Lessees got it, would not hold water, and they had to build a new one. The boats always had trouble at the lower end of the ten mile level, until after that dam was finished, since then, no trouble; repaired the aqueduct twice.

Are you employed by the Lessees.

Yes.

On what portions of the Ohio canal are you acquainted.

From Newcomerstown to Cleveland.

How often do you go over the canal from Newcomerstown to Cleveland.

From Newcomerstown to Massillon, every month, and to Cleveland two or three times last fall.

When you went to Cleveland, did you go on the line of the canal.

Most of the way, sometimes take the road. This winter I was up.

QUESTIONS BY LESSEES.

State what aqueduct you repaired twice.

Since Col. Nugen refreshed my memory, the upper Bolivar aqueduct.

Did you not rebuild the Sandy aqueduct for the Lessees.

Yes.

Have not new lock gates been as often supplied to the locks as needed in your division since the Lessees had it.

They have, I know that, for I have had to frame them all myself.

THOMAS WEST.

SAMUEL FERTIG.

QUESTIONS BY LESSEES.

Age. 60 years.

Residence. Canal Dover.

Occupation. Forwarding merchant on the canal here for over 33 years.

How long and how intimately have you been acquainted with the Ohio canal.

Have been acquainted with it ever since it was constructed. I boated and shipped on the canal and have been collector for almost the last twelve years. I boated in 1833-'34 and 1835; have owned boats since in 1848 and 1849; have owned boat stock nearly all the time since, generally boated from Dover to Cleveland.

Have the Lessees at all times when the season would permit, and the water was not necessarily drawn out of said canal, for repairs or new constructions, or when the same had not been obstructed by ice, or by reason of some unavoidable breach of some structure of said canal, or other casualty, or on account of scarcity of water, produced by drouth, kept the same in good and proper condition and repair, for prompt, speedy, and successful navigation of all boats not drawing more than three feet of water.

Yes, they have.

Can you give the number of clearances at the collector's office in Canal Dover from the year 1864 to 1871 inclusive.

Yes, number of clearances issued at the collector's office, at Dover, during the fiscal year:

Ending Nov. 31, 1864.....	702
“ “ 1865.....	758
“ “ 1866.....	762
“ “ 1867.....	754
“ “ 1868.....	622
“ “ 1869.....	782
“ “ 1870.....	825
“ “ 1871.....	942

What was the usual number of clearances at and before the time the Lessees took the canal.

Do not think it went over 400, and seldom that.

What was the usual tonnage at and before 1861.

I think 60 tons.

State what it has been since.

The usual tonnage would be to average 70 tons, sometimes over and at times under.

State whether there has been any increase of the depth of the draft of boats since 1860.

I think boats are built with a little more bearing, but in proportion to the amount of tonnage, they carry more.

Of the 942 boats that cleared from this port in 1871, what proportion cleared for Cleveland.

About 90 per cent. and perhaps more.

Of the clearances of the last eight years what per cent. cleared for Cleveland.

Ninety per cent.

What draft of water did the boats usually draw that cleared from this port during that time.

Three feet four inches, I suppose, would be a fair average.

With what do these boats usually load.

Majority with coal, loaded at Newcastle, some with ore and wheat.

State whether the round trip to Cleveland, of boats cleared at this port, has been increased or diminished since the Lessees had the canal, as compared with the time when the State had the same.

I don't think there is any difference in length of time to make a round trip.

Has there been any time, since the Lessees had the canal, that there has not been sufficient water to furnish prompt and speedy navigation for boats not drawing more than three feet of water on this sub-division from Trenton to Bolivar.

There has not.

State whether the Ohio canal has been kept and maintained in a condition to be of equal public utility by the Lessees, as at the time of the execution of the lease of the same.

Yes, it has been.

State in what condition the canals were at the time the lease was executed.

The State had not drawn any water here in the spring of 1861 for repairing the canal, and it was scarcely navigable; just about the time the lease commenced, there was a very high freshet here, which broke the canal very much on this sub-division.

State to what you attribute the difficulties and delays occurring to boatmen in running their boats on the Ohio canal.

I would say it was in a great part for want of ability to manage their boats and business generally.

QUESTIONS BY COMMISSIONER.

You have been collector at Canal Dover for the last twelve years, have you.

Yes, canal collector.

Can you tell the number of boats which came up from Hebron in 1859.

One hundred or more.

In 1860.

One hundred or more should say.

In 1861.

Probably the same.

In 1862.

Probably the same.

In 1863.

There were difficulties from want of water there probably in 1864 or 1865.

In 1866.

The number grew less probably, some years more and some less.

In 1867.

There was a time when it increased, then decreased; they improved the feeder, then it increased; the last two years there were very few.

Are there many clearances to go south from Hebron.

For the last two years, not many; for the last part of last year none.

Has there not been a decrease in the number of clearances going south of Hebron since 1861.

There has been a decrease.

To what cause do you attribute the decrease.

There are two causes: One is the want of water at the deep cut, and the other a decrease of freight.

Is it not the increase in the coal trade which causes more boats to run to Cleveland than previous to 1860.

Yes.

Have shippers of iron ore been able to get up as much from the south for the past three or four years as before that time.

The canal has afforded the facilities necessary to carry it.

Have shippers of pig iron been able to get up as much from the south for the past three or four years as before that time.

No, in consequence of the scarcity of water on the Licking summit.

Do you know anything of the canal below Trenton.

Not from personal knowledge.

Was it before or after the lease that the freshet occurred.

Do not know; that Lessees repaired the break.

To what points do you refer when you say the Lessees have kept the canal in good and proper condition for prompt and speedy navigation.

From Newark to Cleveland.

Do you know this from personal knowledge.

From hearsay, from those who navigate it.

SAMUEL FERTIG.

DIVISION NO. 2,

PORTSMOUTH, February 20, 1872.

A. W. WILLIAMSON, of the county of Scioto of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of Ohio.

Have been acquainted with them, from here to Columbus, since their first opening.

What is your business now.

I am running a packet on the canal from here to Chillicothe, tri-weekly, and have been boating on the canal for 20 years.

Were you acquainted with this portion of the canal when it was leased to the present lessees.

I was.

What is the condition of the canal now, compared to when it was leased.

So far as the woodwork is concerned, but little difference; the masonry is in the same condition, less the deterioration of age. The depth of water in the immediate centre of the canal is about the same; the sides and basins are, and have been from their first opening, gradually filling up; the result is, that we can't carry as much, by five tons, as we could when it was first opened.

What is the cause of that.

It is owing to the accumulation of grass in the canal during the summer season, stopping the flow of water; consequently we cannot get the levels full; they are full at the upper end, and down at the lower end.

What, in your judgment, would be the most expedient way of getting rid of the grass.

There are two ways; temporarily, by cutting it and throwing it from the canal; permanently, by dredging.

Have the Lessees been ridding the canal of grass; if so, in what manner.

They have partially done so, by dredging and cutting; dredging was effectual, as far as they went; cutting and throwing out was not sufficient.

Is there sufficient water in the canal, between Portsmouth and Chillicothe, when filled to top water line, to navigate a boat drawing three feet of water.

Yes, at this season of the year.

Is it not so at all seasons, and why.

It is not so at all seasons, because grass stops the flow of water a portion of the year; at other times, for the last two years, there has not been sufficient water in the feeders.

Was this lack of water caused by insufficiency.

Not by inefficiency of the Lessees, but for want of rain fall.

Do I understand, then, from you, that the dams and feeders were in good condition, and would have afforded a full supply of water for navigation, had there sufficient rain fall.

Yes, if the grass had been kept out, mill power and navigation would have been supplied.

Have the size and dimensions of boats been lessened within the last ten years.

No sir.

What was the original size of boats at the opening of the canal.

Forty tons on three feet of water.

What were they afterwards enlarged to.

Sixty tons on three feet of water.

What tonnage will a boat now carry on this portion of the canal.

Sixty tons, when there is three feet of water; some carry sixty-five tons at some seasons of the year.

Do the parties using water power, from here to Chillicothe, interfere with navigation.

They do in the summer and fall, to a certain extent.

How do they interfere.

By drawing water below three feet on the lower end of the level, above the mill.

Are not all the mills properly gauged.

To my knowledge, they never have been gauged; they have been a source of trouble, at some seasons of the year, ever since the canal was opened.

How much of the 51 miles, from Portsmouth to Chillicothe, would have to be dredged to make good and sufficient navigation.

Not over 15 miles.

To what extent have the Lessees made permanent improvements on this portion of the canal, within your knowledge.

They have repaired the State dam at Tomlinson's twice, extensively, and it is now in better condition than when they leased it; they have put in a number of lock gates, and mitre sills; rebuilt the elbow lock, and dredged about five miles of the six mile level; taken out a number of bars with the dredge; dredged about a half mile between Waverly and Tomlinson's dam; have rebuilt the Sunfish aqueduct, and are preparing to build the Camp Creek creek one; have the stone and timber out to rebuild the Deer creek aqueduct.

Has the filling up of the sides and basins of the canal, mentioned by you been going on to any greater extent since the lease than before.

Yes.

How do you account for this.

1st. By the canal getting gradually smaller. 2d. A greater decomposition of grass. 3d. As the country becomes more cleared up there is more dirt carried into the canal by little streams and drains.

A. W. WILLIAMSON.

JOHN C. LEWIS, foreman on State Boat No. 3, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of Ohio.

I have been acquainted with them from Portsmouth to Chillicothe since they were first opened.

What is the condition of the canal compared with the time it was leased to the present Lessees.

Some of the portions are just as good as when leased, and some are better; on the whole, it is in about as good general condition now as when leased, with the exception of grass, which is worse.

What is your recollection of the original capacity of boats.

About forty tons on three feet of water.

What has been the capacity of boats within the last ten years.

Sixty-five or seventy tons on three feet of water.

What is the condition of the tow path and berme bank compared with what it was ten years ago.

I think it is fully as good.

What permanent structures have the Lessees put on the canal to your knowledge.

They have put up the Pee Pee dam, which was not an original structure, at a cost of between \$6,000 and \$8,000, and have put in 16 or 18 new gates in my time, spliced six pair of old gates, and rebuilt one-fourth of the Elbow lock.

What structures need repairing or re-building.

State Run culvert requires repairing. Brush Creek aqueduct needs a new leaf in the arch, and strengthening of the cord, the trunk is good. Camp Creek aqueduct will probably require to be repaired in the next two years. Sunfish is in the same condition.

Is the leakage in the gates and locks more than what would be ordinarily expected.

It is not.

Are they better or worse than they were ten years ago.

They are in a better condition.

In your opinion, was there a sufficient supply of water above navigation, for the mill powers, in all ordinary seasons, had it been properly used.

I think there was.

Are the mill powers on your division properly gauged.

No.

JOHN C. LEWIS.

C. OVERTURFF, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of Ohio.

Have been acquainted with the Ohio canal since its construction.

What is the condition of the canal now compared to what it was when leased to the present Lessees.

I consider it in as full as good repair as then.

What is your business.

Have a saw mill at lock No. 48.

What has been the condition of the waste water at that point for the past ten years.

The waste water has been good up to the last two years, when we have had dry seasons, to which I attribute the lack of water.

Have the Lessees kept up the repairs as well as when it was under the control of the State.

I think they have.

What portions or structures of the canal, need repair, in your knowledge.

The roof of Brush Creek aqueduct, needs repair.

CONRAD OVERTURFF.

JAMES DAVIS, being first duly sworn, deposes and says :

How long have you been acquainted with the Public Works of Ohio.

Have been acquainted and worked on them for fourteen years.

What portions of the canal are you acquainted with, and what is its condition now compared with when it was leased to the present Lessees.

I have charge of the locks and canal from the outlet lock, to the powder mill lock, four miles above here. Its condition is quite as good, if not better, than when leased.

Do the gates in the locks you have charge of, waste much water by leakage.

No, they are quite as tight as can be made.

What repairs have been made by the Lessees, to the locks and canal in your charge.

They have rebuilt nearly all the gates, and put in one new mitre sill, not long since, at the 2d lock, and put in a new foundation flooring and masonry at the Elbow lock.

Can boats loaded to three feet, pass on the canal as far as you have charge.

They can, at all seasons, except, when the grass interferes.

JAMES DAVIS.

A. E. GAGE, being first duly sworn, deposes and says :

How long have you been acquainted with the Public Works of Ohio.

About twenty-four years.

Were you acquainted with this portion of the canal, when it was leased to the present Lessees.

Yes, but particularly with the locks and aqueducts, from here to Waverly.

What is its condition now compared to when it was leased to the present Lessees.

The locks are better, except the river lock ; and Brush Creek aqueduct I think is better. From Brush Creek to Waverly, I have not been over much ; can't say.

What repairs have the Lessees made to your knowledge.

Have put in fifteen or sixteen new gates ; put in new flooring and foundation in Elbow lock ; and rebuilt about one-fourth of it ; also put in a new mitre sill, at Bridge lock ; and rebuilt four new cribs at Elbow lock ; and six mile was dredged in 1870.

A. E. GAGE.

WILLIAM G. WHITNEY, being first duly sworn deposes and says.

How long have you been acquainted with the Public Works of Ohio.

Have been acquainted with the Ohio canal ever since it was constructed, and have been engaged in boating ever since 1842.

Were you acquainted with this portion of the canal when it was leased to the present Lessees.

I was.

What is its condition now, compared to when it was leased.

I don't think its condition has changed very materially. I think the principle deterioration or running down of the canal, was when the first contractors for repairs had charge of it.

Is there sufficient water in the canal from Portsmouth to Chillicothe

when filled to top water line, to navigate a boat drawing three feet of water.

Coming from Chillicothe this way you can load a boat about three feet, and three feet two inches, and going from here there, can load about two feet ten inches; can load to three feet by putting on extra team.

What tonnage will your boats carry drawing these depths.

When loaded to three feet, will carry 70 tons; to three feet two inches, 75 tons, and to two feet ten inches, 60 to 62 tons.

Do you load your boats as heavily and make as good time as you did ten years ago.

I think we do.

Do the parties using water power from here to Chillicothe interfere with navigation.

They do in the summer when the grass is bad; they draw the lower end of the level down; having no gauges, they use the water as long as it will flow into their forebay.

Has the growth of grass been increasing in the canal for the past few years.

It is worse in dry seasons than in wet ones; the two past seasons being very dry the grass has increased, and is the main obstruction to keeping a supply of water in the canal.

Have the Lessees maintained the structures on the canal in as good repair as they were when leased.

With the exception of wear and decay, they are in about the same condition.

Should the outlet lock of the canal into the Ohio river be improved as proposed by the board of trade, what would in your opinion be the result.

I think it would result in an increase of business on this end of the canal, of 25 per cent.

W. G. WHITNEY.

PORTSMOUTH, O., March 23, 1872.

GEORGE DAVIS, of the city of Portsmouth, Scioto county, and State of Ohio, being first duly sworn, deposes and says.

How long have you been acquainted with the Public Works of this State.

I have been familiarly acquainted with them for twenty-five or thirty years, more particularly that portion from Portsmouth to Chillicothe.

What is your present business.

Distilling and milling, and have been engaged at it for the last fifteen years, and have to use the canal for the most of my shipping, and the water power for my mills.

What is the comparative difference in the canal from Portsmouth to Chillicothe now and when first leased.

I think the canal is in full as good order now as when first leased, when it is supplied with water. There has been a scarcity of water caused by the drouth of the last two years during which time my mill has been cut short of supply of water at times.

Have the Lessees kept up all repairs, and rebuilt all necessary structures promptly so as to maintain navigation.

They have done so more promptly than under State control.

Can a boat drawing three feet water, navigate this portion of the canal.

They can without difficulty, when there is an ordinary stage of water. Is there any interruption by grass on this part of the canal.

There is during the grass season at times considerable trouble.

Do the Lessees or their employees always use due diligence in having the canal rid of grass.

They do.

What is the usual tonnage of boats on this portion of the canal.

They carry from sixty to sixty-five tons.

GEORGE DAVIS.

PORTSMOUTH, O., March 25, 1872.

R. S. WYNN, of the county of Scioto, of lawful age, being first duly sworn, deposes and says :

How long have you been acquainted with the Public Works of this State.

I have been acquainted with them for about thirty years, more particularly the part from Chillicothe to Portsmouth.

What is now, and what has been your business.

I am a contractor on Public Works ; have been a superintendent heretofore on the canals, and have done a large amount of work on them as a contractor.

What is the present condition of the canals, compared with when first leased.

I think the portion that I am acquainted with, is in as good condition as when first taken in charge by the Lessees.

Have they repaired or rebuilt any locks, dams, aqueducts or culverts.

They have rebuilt the guard lock at Higby's, and the upper Pee Pee lock ; repaired the guard lock at Jasper ; rebuilt the lower part of the elbow lock at Portsmouth, and they have substituted new gates in all the locks on this portion of canal, and they have rebuilt the large dam at Tomlinson's ; the culverts have all been kept in good repair, and they have substituted aqueducts at Sharonville and Waverly for culverts, and it is better now than ever it was. The permanent structures are quite as good now as when first leased.

Can boats navigate successfully, drawing three feet of water.

I think there is no trouble in doing so.

What is about the average tonnage of boats on this part of canal.

They carry from sixty to sixty-five tons, on ordinary water.

Could the termination of canal at Portsmouth be improved, and what would be the effect on business.

It could be much improved by an ordinary outlay of money, and it would increase the business of the canal very largely.

Have you had any difficulty about water at your mill at lock number 47, south of Licking Summit.

We have had no trouble ; have always had sufficient water.

R. S. WYNN.

CHILLICOTHE, O., February 22, 1872.

JAMES EMMITT, of the County of Pike, of lawful age, being first duly sworn, deposes and says :

How long have you been acquainted with the Public Works of this State.

From the first shovel full of dirt ever thrown out of the Ohio canal, in the year 1824, at the Licking Summit.

What is your business now.

Distilling and Milling.

In your business, do you ship by canal, and what are you freights.

I do ship by the canal : Flour, coal, corn, highwines, hogs and lumber ; being now, and having been heretofore, one of the largest shippers from Waverly.

Have you any other facilities for shipping.

None other from Waverly, excepting the canal.

Was you acquainted with this portion of the canal when it was leased to the present Lessees.

I was.

What is the condition of the canal now, compared to what it was when leased.

The condition is as good now as when leased, excepting the grass in the grass season, and the annual accumulation ; for water power equally as good, but for navigation, not so good.

What is the cause of this annual accumulation.

The improvement and tilling of lands bounding the canal ; being plowed up, the loose soil is washed into the canal by rains, which forms this sediment, and produces the growth of grass.

What, in your judgment, would be the most expedient way to get rid of this grass.

By bottoming out the canal.

Have the Lessees done the same amount of labor in taking out grass and accumulation, and also in repairing structures and other general repairs, as the State did previously.

I think they have.

Are you acquainted with any structures that have been rebuilt or repaired since the term of lease.

I am. The culvert at Waverly, fell down immediately after the lease went into effect, which was substituted by an aqueduct ; also, an embankment at Pee Pee lock, was substituted by a dam, at a cost of about \$8,000. The embankment was washed away by a freshet ; also, the Tomlinson dam was repaired in such manner as to give a full supply of all the water in the canal, within the last year, as well as could be done, but in consequence of the heavy growth of grass between Waverly and Sharonville, the supply of water was checked to such extent as to make the navigation and water power somewhat deficient. Furthermore, there were a large amount of repairs made—damage done the canal by floods.

Have the Lessees shown due dilligence in removing the grass from the canal.

Between Waverly and the Tomlinson dam, the grass was cut, and in good time, too.

What was the tonnage of boats, at the opening of the canal.

Boats then carried thirty to forty tons, being constructed for both pas-

senger and freight traffic ; they were of greater capacity, but were limited to this amount of tonnage to accommodate passenger travel ; having at that time a full sized canal with four feet of water.

What is the present tonnage of boats, and the cause of the difference on less water.

Boats now will carry fifty-six tons on three feet of water, for the reason that boats are differently constructed, being flat and broad on bottom, and round at bow and stern, instead of being keel-boat style, with sharp bow and stern.

When the canal is kept up to top water line, will it permit a boat loaded three feet to navigate.

Under ordinary circumstances, there would be three feet of water for navigable purposes.

Has the canal been kept up generally to top water line.

In wet seasons it has been generally kept up to that point, but in dry seasons, or account of drought, and the narrowing of the canal, the amount of water required for navigation, and the excess of water power at Waverly, being a greater amount leased by the State than there should have been, the canal is not kept up to top water line. The leases were all effected by the State prior to the Lessees taking the canal.

Is there any difficulty in boats passing each other at any point on the canal.

Heavily laden boats cannot pass each other at narrow points in the canal, and it always will be so, unless the canal is thoroughly bottomed out.

Are you the owner of a mill at Waverly, at lock No. 44, south of Licking Summit.

Yes, I am the owner of a mill, built in 1837; was owner in part and helped to build the mill, and am now the owner of the whole of the mill, and have been for the last fifteen years.

What is the power leased you at that point, and whom did you lease it from.

The original lease from Leander Ransom, in 1836, is for four run of four and one-half feet burrs, for a term of 30 years, for four hundred dollars, the surplus water for that purpose, not necessary for navigation.

Was the water then properly determined by the agents of the State.

It was determined by Wm. H. Price resident engineer at that time, he directed us how to set our wheels, laid out our mill basin, which was constructed at our expense.

Were the regulating weirs put in according to the direction of the engineer.

They were.

Are those weirs now at your mill, at the same points.

They remain without any alterations.

What is the height or depth and width of the regulating weirs at the basin below the top water line.

The height about 18 inches, the width of one is six feet, and of two ten feet each.

What is the lift of the lock at that point, and what kind of wheels do you use and of what size.

The lock is twelve feet lift and the wheels are overshot wheels, twelve feet long and ten feet four inches in diameter. I have three wheels, each to propel two run of burrs.

Have you had a regular supply of water under this lease, during the period of the Lessees' control.

From 1861 to 1863 the supply was regular; from 1863 to 1870 I was absent from home, and did but little business; had but little use for the water. In 1866 the flouring mill was built on Butt and Lewis lease, which calls for 300 feet of water. The race is dug to the bottom of the canal. The mill is the Merchant Mill; had two run of burrs; in operating this mill last year, the water was drawn down so that I had not sufficient power for one run of stone in my mill. It is my opinion that they are using 1,400 feet per minute. On account of lack of power to run my mill, I refused to pay my rent; but on a promise from the Lessees that this matter should be adjusted, I subsequently paid my rent.

What effect does the use of this water power have on the navigation on the level above Lock No. 44.

When they are all using the water as the weirs are now adjusted, navigation would be suspended, the water being drawn down at least 18 inches below top water line, and producing a current of about three miles per hour.

Is the supply of water from the feeder at at the Tomlinson dam sufficient for the purposes of navigation and mill power through to Portsmouth.

The supply of water from Tomlinson dam is sufficient for navigation through to Portsmouth; and surplus water would be sufficient to run my four runs of four and a half feet burrs, provided the canal is kept in condition it has been for the last year.

Do you experience any difficulty in shipping from want of a proper outlet into the Ohio river.

I experience great difficulty. If a proper termination was completed at Portsmouth, it would greatly increase the business in my opinion at least 25 per cent.

JAS. EMMITT.

WILLIAM H. ALLISON, of Ross county, of lawful age, being first duly sworn, deposes and says:

What is your business at present.

Principally engaged in the lumber trade on the Ohio canal, shipping about 6,000 cords of tan bark, one million each of staves and hoop poles and a large quantity of hub timber and locust posts, and about 500,000 feet of sawed lumber annually.

How long have you been acquainted with the Public Works in Ohio.

I have been doing business for about 15 years on the Ohio canal.

Is the canal in as good condition now as it was ten years ago.

It is, with the exception of the natural wear and tear of permanent structures, but there has not been a sufficient quantity of water in the last two years on account of drouth or proper amount of rain fall to supply for navigation, which is not the fault of the Lessees.

Have the Lessees shown due diligence in keeping the canal in as good condition as it was in 1861.

In my opinion they have, and more than I should have done were I one of the board of Lessees.

Is there any difficulty in two loaded boats passing each other on the canal.

I have never heard any complaint in that way. My boats are very broad and flat, and in loading with tan bark, they load out so as to rub in the Locks, and if there would be and difficulty in passing, these boats experience it, and would hear of the complaints if any.

What is the amount of tonnage of the boats you ship on.

About sixty to sixty-five tons.

For the last ten years, has the condition of the canal been such to load down a boat three feet.

Under ordinary circumstances there was sufficient water (and at times three feet two inches, with the exceptions of the dry season of the fall 1870 and 1871), for navigable purposes.

What portion of the canal do you ship most over.

From Portsmouth to Columbus.

Do you experience any great difficulty in shipping from the want of a proper outlet at Portsmouth, into the Ohio river.

I do, the business would be greatly increased if we had a proper outlet into the Ohio river.

W. H. ALLISON.

W. C. SAFFORD, of Waverly, Pike county Ohio, of lawful age, being first duly sworn, deposes and says :

How long have you been acquainted with the Public Works of the State.

For about eleven years.

What is your business.

I am a commission merchant and collector of tolls at Waverly.

Were you acquainted with the works when first leased to Lessees, and how do they compare now with then, as regards their condition.

I am acquainted with works for the time above given, and consider the condition of the canal fully as good now as then generally speaking, so far as my knowledge of the canal consists, from Portsmouth to Columbus.

From what source do you gain this information.

From personal observation and reports from boatmen, who were frequently passing over this portion of the canal.

Do you know of any structures that have been rebuilt or repaired since the term of this lease.

I do know of the culvert at Waverly being washed out since the lease, which was substituted with an aqueduct. The embankment at Pee Pee lock being washed away, was substituted with a dam, at a cost of about six to eight thousand dollars ; there was also great deal of repairing done at the Tomlinson dam, the precise nature of which I cannot describe. I know of a great number of new gates that were put in, and from my knowledge would say that the permanent structures are quite as good now as ever.

Are you acquainted with the manner in which the water is supplied to the three mills at Waverly, and if they have generally got their full supply.

I am acquainted with the water supplies to these mills, and think that each of them used more than the amount stipulated by the terms of the lease.

Since your acquaintance with these mills, have they been properly gauged with regulating weirs to supply the mills with the proper quantities of water they are entitled to.

No, there has never been any regularity in the quantity of water used ; they have generally used largely in excess of the amount entitled to by the terms of their leases.

Were these mills properly gauged to the amounts stipulated by the terms of their leases, would there not be good navigation from Tomlinson's dam to Waverly.

There would be no trouble on this level at all in navigation.

What kind of wheels do these mills use, and could not the difficulty be remedied by the use of an improved wheel.

They are using the old fashioned overshot wheels, but I think by the use of the H. V. Martin's newly patented turbine wheel, so much less water would be used, and the mills being properly gauged, the difficulty would be entirely obviated.

What is the average amount of tonnage carried on loaded boats, between Portsmouth and Columbus.

The average tonnage of loaded boats is from fifty to sixty tons.

Have you heard much complaint from boatmen clearing from your port.

During the years 1870 and 1871, the drought was so severe, that it was impossible to supply the canal with sufficient amount of water for good navigation and for milling purposes, from the feeder at Tomlinson's dam south. Although the boats navigated with full loads, it was attended with great difficulty, for which no one could be held accountable, as it was from lack of rain fall.

WM. C. SAFFORD.

WASHINGTON McLANE, of Chillicothe, Ohio, of lawful age, being first duly sworn, deposes and says :

Are you acquainted with the public works of Ohio, and how long.

I am acquainted with southern part of the Ohio canal since being built, but intimately since 1854. I commenced milling at that time.

What is your business now.

Milling business in Chillicothe, at Fourth street, lock No. 37, south of Licking Summit.

How many run of stone do you use in your mill.

We have four run of stone but make use of but two, and much of the time during the grass season we have not even enough water for even one run.

What difficulties do you experience in obtaining water for the use of your mill power.

I have no difficulties from November 1st, to June 1st, but from June 1st to November 1st, we have trouble. If the grass was thoroughly taken out of the canal, we would experience no trouble in obtaining sufficient water.

What wheels do you use in your mill.

I have one overshot wheel attached to two run of stone, and a Leffel wheel attached to two run of stone, employing the Leffel wheel in the winter season, and the overshot during the summer season.

What is the condition of the locks at your mill.

The walls and flooring of the locks are all tight, but the gates are bad, especially the upper gates, which are too long, one lapping over the other when closed, causing a leakage at mitre sills in the center of the gates. The pivots of paddles I think are pretty badly worn; the locks not having been overhauled in the last six years.

If new gates and paddles were put in, do you think the locks would then be perfectly good.

If properly put in, I would consider them all right.

Have they raised the mitre sill at the lock at your mill.

The mitre sill of the lower gate is raised about three inches, to fit the gates, they being too short when put in.

Is there a regulating weir at your mill, to supply it with the proper quantity of water you are entitled to.

There is such a weir at my mill, which is one foot below top water line, and eighteen feet wide.

Did the Lessees during the past season use due diligence in removing the grass from the canal.

From the best of my information, I consider that proper diligence was used to remove the grass during the past season.

What is the size of your overshot wheel.

It is eighteen feet long, and eight feet one inch in diameter.

WASHINGTON McLANE.

MARTIN SCHILDER, of Chillicothe, Ohio, of lawful age, being first duly sworn, deposes and says :

How long have you been acquainted with the Public Works of the State of Ohio.

I am acquainted with the Ohio canal between Portsmouth and Columbus, for about the last 15 years past.

What is your business at this time.

I am in the milling and grain commission business.

Were you acquainted with the condition of the canal when the Lessees took charge of it, and how does it compare with its present condition.

I was acquainted with the condition, and consider the canal not so good now on account of its filling up, and the grass.

Have the Lessees in keeping up the canal showed due diligence in the last ten years.

Yes, they have used due diligence.

To what depth can you load your boats.

During good stages of water they load at about three feet, but in extreme low water they load at two feet six inches.

Was that about the average in the last two years on the southern portion of the canal.

No, I think it was better than that on the southern portion of the canal, that is from Portsmouth to Chillicothe. The difficulty of shallow water occurred on the 18 mile level and the Columbus side cut.

What is the average tonnage of loaded boats, you ship on.

The average tonnage has been from 50 to 60 tons in the past ten years.

Have you a mill at this place, and what kind of wheels do you use, and of what size.

I have a mill at this place ; have one breast wheel, 22 feet long and 11 feet in diameter.

How many runs of stone are in your mill.

We have four run of stone, but use only two run by water power, the other being propelled by steam power.

Do you experience any difficulty in the use of your water power.

I experience some difficulty in the summer or grass season, which has been experienced prior to the Lessees control of the canal, and during the control of the State.

How many barrels of flour do you make per day with two run of stone when the level is full.

From seventy to ninety barrels per day.

Is there a regulating weir at your mill, to supply it with the proper quantity of water that you are entitled to.

There is no regulating weir, I get all the water that comes down.

MARTIN SCHILDER.

SAMUEL LEWIS, of Chillicothe Ohio, of lawful age, being first duly sworn deposes and says:

What is your occupation.

I am a canal boatman.

How long have you been acquainted with the Ohio canal.

I went on the Canal in 1848.

Is there any difficulty in navigating with full level, boats being loaded down three feet.

With full levels there would be no difficulty in loading to three feet, but it is altogether owing to the boats built.

Is the condition of this canal at this time as good as it was prior to the Lessees having control.

I do not see much difference in the condition of the canal, about as good now as then, excepting the grass which has probably increased in growth, which is one of the great obstacles to navigation and water power.

Have the Lessees used due diligence in keeping up the repairs of the canal during their term.

They have, and have been equally as prompt and if anything, have done better than the State.

Can you carry as much freight on your boats now, as you could when the State had control.

Yes; our loads consist of 2000 bushels of wheat; 2100 bushels of corn, and 50 tons of pig iron, from here to Columbus.

SAMUEL LEWIS.

CIRCLEVILLE, O., March 12, 1872.

JOSIAH PARKHURST, of the county of Pickaway, and town of Circleville, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of this State.

Have been acquainted with the Ohio canal from Portsmouth to Cleveland, since 1837, and the Hocking canal, since it was built.

What has been your business, and what at this present time.

Boating is now and has been my business every since 1837, excepting part of two seasons.

Were you acquainted with the canal when it was first leased to the present Lessees, and what is the condition of the canal now compared to when it was leased.

I cannot see that there is any material difference from Portsmouth to Roscoe, including the Columbus side-cut, but from Roscoe to Cleveland, the canal is in a better condition than it ever was, excepting the usual wear and tear on permanent structures, but decidedly so for navigation.

Is the accumulation of sediment, filling up the channel of the canals now in greater proportion, than under the control of the State.

I do not think that the proportion is greater now than it was then, on an average, some places have filled up more, and others have been dredged out, making the canals about as good as they were then.

Are you acquainted with the locks, dams, culverts, and aqueducts, on the portions of the canal that you have been on, if so, what are their present condition as compared with when leased.

The locks are about as good; the dams I do not know much about; and have heard no complaints of culverts; the aqueducts are about similar, except the additional age; the large aqueduct at Circleville, will require to be rebuilt before many years.

Is there any improper or unusual wastage of water in the lock gates or through the locks.

There is not, they are generally in good condition; occasionally a lock or the gates get out of order, but they are promptly repaired, as much so as under the control of the State.

Is there much grass in the canals, and do the Lessees use due diligence in ridding the channel of it, in grass season.

There is a large amount of grass in the canals, and it is increasing every year, but the Lessees make the usual effort to get it out of the channel; they occasionally have an inefficient man whom they discharge.

Can boats drawing three feet of water, navigate the canals with success. I never have any trouble in navigating them, when they are supplied with the regular amount of water from all the feeders.

Do any of the mills interfere with the navigation of the canals.

When there is a scarcity of water, there is a general complaint of the mills in the abuse of the water power, by interfering with navigation.

What is the amount of tonnage carried by boats on the canals.

About sixty tons is an average load on that part of the canal from Portsmouth to Columbus, and to Roscoe.

Have the Lessees or their employees, used due diligence in making repairs of all breaches, and rebuilding or repairing all structures when necessary.

They have promptly repaired all breaches so as to cause no unusual delay, and have rebuilt and repaired several locks, and put in a large number of lock gates, and have made considerable repairs at Circleville and Tomlinsons dams. They repaired Circleville aqueduct by replacing some new timbers in it, and built a dam below Waverly. They have done the work quite as well as was done by the State for ten years previous to leasing, but I think neither the State nor they have performed the work necessary for the demands of business; they require a thorough dredging out.

Are the mills to the best of your information, regularly gauged.

The most of them have some kind of a gauge, but it is so they can draw down the level below the point of navigation.

If the canals were thoroughly bottomed out, and enlarged to the original size, would it increase business to any extent.

It is my opinion, that an enlargement or a thorough bottoming out of the canals, and the improvement of the termination at Portsmouth, and also providing well for husbanding the water at Licking Summit reservoir, would increase the effectiveness of them very much, and bring a large amount of business upon them that they are now deprived of.

J. PARKHURST.

JAMES SMART and B. F. JENNINGS, after having been duly sworn, and heard the above statement of Capt. J. Parkhurst read, make the following endorsement:

We, the undersigned, having heard the testimony given by Capt. J. Parkhurst, fully endorse same.

JAS. SMART,
B. F. JENNINGS.

COLUMBUS, O., March 13, 1872.

WILLIAM ELSEY, of the county of Pickaway, and town of Millport, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of this State.

I have been acquainted with the Ohio canal from Portsmouth to Cleveland, and Hocking canal for fifteen years.

What has been your business on the canals.

I have been a boatmen, and I am at this time engaged at that business.

What is the condition of the canals now compared with when first leased.

They are not in so good a condition in my opinion, the locks leak and the canal is nearly filled up.

Are you acquainted with the locks, dams, culverts and aqueducts, if so, what are their present condition.

The locks have been repaired and are not now so bad as they were; the aqueduct at Circleville, required repairs, it leaks considerable. I do not know anything about dams; there are two culverts between here and Millport, that require repair very much.

Is there any improper leakage or waste of water in the lock gates or through the locks.

There is a lock at Lockbourne, that leaks through the walls and requires repairing, and also through the gates, and the other locks at Lockbourne waste some water; I know of none others that are so bad.

Can boats drawing three feet of water, navigate the canals with success.

It is done with some difficulty at points in consequence of a deposit of mud in the channel.

What is the tonnage of boats on the canals.

We carry on an average about 60 tons. I have on my boat now 1565 bushels of corn, boated from Millport, about 54 tons.

Does the grass give you any trouble in navigating the canal.

It does, they do not take it out as well as it should be.

WM. ELSEY.

M. A. PRITCHARD, of the county of Franklin, and city of Columbus, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of this State.

I have been acquainted with the canal, from Portsmouth to Cleveland, since 1842, and for the last thirteen years from Portsmouth to Columbus but mostly from Chillicothe to Columbus.

What has been your business.

Boating; and am now engaged at that business, running a packet between Columbus and Chillicothe.

What is the condition of the portion of the canal between Columbus and Chillicothe now, compared with what it was when first leased.

I think, so far as the canal from here to Chillicothe, it is better than when first leased.

In what manner is it improved.

In cleaning out the channel, and cutting grass and repairing structures, it is made better.

Are you acquainted with the locks, dams, culverts and aqueducts, and what are their present condition, compared with when first leased.

The lock at Circleville, one-half has been rebuilt, and they have put in a large number of new gates, and they are rebuilding a part or the whole of a lock, two miles below Circleville; and they are rebuilding aqueduct at Deer Creek; the aqueduct at Circleville has been repaired some; but probably now requires a new roof, and the usual repairs after a hard winter; culverts, no complaint.

Has there been any chiseling down the sides of any of the locks for the passage of boats.

There has been none that I have observed.

Is there any unusual or improper waste of water through the locks or gates.

There is none; the levels are generally full.

Can boats drawing three feet of water, navigate successfully, this portion of the canal.

There is no trouble when the water is at the ordinary height.

What is the tonnage of boats on this part of the canal.

The average amount usually carried is about sixty tons.

Have you had to suspend navigation at any time during the last season.

We lost no time when the canal was open.

Is the accumulation of sediment in the canal, sufficient to impede navigation at any point.

It is not, when the water is at an ordinary height on the Columbus side-cut; at starch factory there is sometimes a deposit run in, and should be stopped.

Do you know of any obstructions to navigating this portion of the canal.

I know of none; but some private bridges that are below the height permitted by law—and the abutments stand in the canal, not giving the space required by law.

Do the Lessees or their employes use due diligence in making all necessary repairs of breaches, or repairing or rebuilding structures when needed.

They do; I think they are more prompt in all these things than the State were.

M. A. PRITCHARD.

E. A. FITCH, having been duly sworn, and heard the above statement read, adds the following endorsement:

I having heard the testimony given by Capt. M. A. Pritchard, fully endorse the same.

E. A. FITCH.

WM. MONYPENY, having been duly sworn, and heard the above statement of M. A. Pritchard, adds the following endorsement:

I having heard the testimony of Capt. M. A. Pritchard read, endorse the same as far as my knowledge of the canal extends, which is from Columbus to Lockbourne.

WM. MONYPENY.

KIRKERSVILLE, O., March 14, 1872.

GEORGE FOSKETT, of the town of Kirkersville, in the county of Licking, in the State of Ohio, of lawful age, being first duly sworn, deposes and says:

What is your present business.

I am a miller, and reside at the town of Kirkersville, and own a mill on the Kirkersville feeder of the Licking Summit reservoir; supplied from the South fork of Licking.

How long have you owned said mill.

Three years in April, since I commenced operating the mill.

What has been the supply of water in the feeder during that time.

The first year, 1869, was good; in the years 1870 and 1871, was almost a total failure; during the year 1871, from the month of March, until the present time, there was no water run over the dam; but on one or two occasions, and then but for an hour or two, there has been no water wasted at this point; the dam is very tight and is in very good condition.

Has there been any water passed down the feeder, of any amount during the year 1871.

There has been a very small amount, much less than at any time since it was a feeder.

Is the feeder in a condition to save all the water passed into it, and prevent its waste.

It is in better condition now than it has ever been before, on account of filling up the old waste weir and putting waste gates at the stone brake, by which, I think, the capacity of the feeder is doubled. This improvement has been made about two years; it has been cleaned out and the banks have been raised.

Has this been considered an extraordinary drouth.

It has; there not having been such a drouth within the knowledge of citizens residing here for thirty-five years in this locality; and it existed over the entire water-shed that would supply the reservoir. The creek has not been bank full since March, 1870, and the greater part of the summer 1871, the bed of the creek was actually dry, with the exception of a few small holes, and in consequence, no water in the feeder; it being perfectly dry most of the distance to the reservoir.

Have the Lessees or their employes shown a watchful care of the feeder and dam, and in husbanding the water in the reservoir.

Yes, they have, I think; nothing more could have been done than they have, in making efforts to secure all the water and get it into the reservoir.

GEORGE FOSKETT.

NORTH LOCK, LICKING SUMMIT RESERVOIR, March 15, 1872.

ISAAC MINTHORN, at the North Lock at Licking Summit Reservoir, in the county of Fairfield, in the State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of Ohio.

I have been acquainted with the Ohio canal from Chillicothe to Cleveland, and Hocking canal from Chauncey to Carrol, for twenty years, and was born and raised at the Licking Summit reservoir, and have resided most of the time at that point.

Has there ever been in your knowledge a period when the Licking Summit reservoir, was as low as it has been in the years 1870 and 1871.

Never within my recollection, and it is generally so conceded by all the old citizens to be the lowest ever known during the last two seasons. It failed in the summer and fall of 1870, and did not fill up in the winter of 1870 and 1871, and in the month of March, 1871, on the 28th day, it was three feet, two inches below top water line; and on April 4th, it was 3 feet $1\frac{1}{2}$ inch; on the 11th, of the same month, 3 feet $2\frac{1}{2}$ inches; on the 18th, of the same month, 3 feet 4 inches; on the 25th of the same month, 3 feet $5\frac{1}{2}$ inches; on the second of May, 3 feet 6 inches; on the 9th of May, 3 feet 4 1-8 inches; on the 16th of May, 3 feet $4\frac{3}{4}$ inches; on the 23d of May, 3 feet 6 inches; on the 30th of May, 3 feet $8\frac{3}{4}$ inches; on the 15th of June, 4 feet 1 inch. It continued to fall in the same proportion or even greater, during the entire season, there being no rains to effect any change, and it is now much lower than it was at the same date last year, at least two feet.

What is the condition of the feeder for receiving water into the reservoir.

The feeder is in good repair, much better condition than when the reservoirs has been entirely filled with water, and has double the capacity for carrying water that it had seven years ago, or any time previous to that.

Do you know anything about the stage of water in the south fork of Licking during the last two years.

It has been very low; being less water in 1870 and 1871, in the south fork of Licking than I ever knew, during my recollection.

Have the Lessees, or their employees, always used due diligence in husbanding carefully all the water that went into the reservoir.

Yes sir, I think they have done all that could be done, and have done more than was usually done under the control of the State.

Are all the banks secure and in good condition at this time to preserve the water, if the reservoir was filled.

I think the banks are equally as good, if not better, than when first leased, they having repaired the banks and put on stone where it had never before been stoned, and there is no leakage in the banks, or waste of water at any point.

What, in your opinion; is the cause of the failure of the reservoir.

It is the extreme drouth, which has been general in this region for more than two years past, that has brought about the failure.

I. MINTHORN.

MILLERSPORT, O., March 15, 1872.

JOHN H. WEAKLEY, of the town of Millersport, in the county of Fairfield, in the State of Ohio, of lawful age, being duly sworn, deposes and says:

How long have you been acquainted with the Public Works of Ohio.

I have been acquainted with that portion of the canal from Winchester to Newark about 33 years. .

What is the condition of the canal now compared with when first leased.

There is not any material difference from when the State had them ; it has filled up some, and has been dredged out some.

What is the condition of the Kirkersville feeder.

I think it is in far better condition than I ever saw it. The capacity of it has been increased largely, from the fact that it drains the adjacent lands, some of which was never before drained, and the banks have been strengthened, and are now safer than they have heretofore been, and they do not have to resort to venting the water by cutting the banks, as formerly. Some five or six years ago they gave it a general cleaning out and deepened it.

Have the lessees, or their employes, used due diligence in husbanding the supply of water in the Licking Summit reservoir.

I think they have done everything that was necessary for the preservation of the water ; the locks are in good condition at the north and south end.

How are the banks of the reservoir ; are they sufficiently strong to prevent waste or leakage of water, and to hold the water carried into it.

I think they are, so far as my knowledge of them extends, in a condition to maintain the water in them.

What, in your opinion, is the cause of scarcity of water in the Licking Summit reservoir.

It is, in my opinion, caused by the extreme drouth of the years 1870 and 1871, which has exceeded any former years since my acquaintance with this locality.

J. H. WEAKLEY.

Joseph Rader, N. J. Kelley, J. W. Larimer, after having been duly sworn, and heard the above statement of J. H. Weakley read, add the following endorsement :

We, the undersigned, having heard the testimony given by John H. Weakley, fully endorse the same as our testimony.

JOSEPH RADER,
N. J. KELLEY,
J. W. LARIMER.

PUGH, O., S. LOCK, LICKING RESERVOIR,
March 16, 1872.

B. M. PUGH, of the county of Fairfield, in the State of Ohio, of lawful age, being duly sworn, deposes and says :

How long have you been acquainted with the Public Works of Ohio.

I have been acquainted with them for 25 years, from Newark to Portsmouth.

What is the condition now compared to when first leased.

I think the general condition is about as good as when first leased, excepting the deep cut, which filled up some; but they have dredged out some of it, and I understand they are going to take out the balance, having to quit last fall for want of water to float the dredge.

What is your present business.

Buying and shipping grain.

How do you ship your grain.

By canal, and have no other mode by which to ship.

What is the condition of the locks, dams, culverts and aqueducts.

I know of two locks being built, one at Lockville, and one at Taylor's Lock, four miles this side of Newark; there are some lock gates needed down about Baltimore; I understand they are in readiness to put in when water is taken off. I don't know anything about dams; culverts in good repair as far as I know. The two aqueducts below Minthorn's were rebuilt within the last four years; the condition, as far as I am able to judge, is about as good as when leased.

What is the tonnage of boats on the canal.

About sixty to sixty-five ton.

Is there any improper leakage or waste of water in the locks or gates.

There is none at present; they have been grouting lock walls and fixing gates, so they are now in pretty good condition.

Is there any difficulty in navigation arising from the use of water by the mills.

There is difficulty by not having proper regulating weirs.

Have you had difficulty in the navigation at the Licking Summit reservoir, or that locality.

Yes, we have, which has been caused by the drouth; for the last two years the water has been lower in the reservoir than I have ever known it. I think the lessees have done all that could be done under the circumstances to maintain navigation at this point. I think if the State would have the sides of the canal piled through the deep cut, it would prevent the sliding in of the earth, and with ordinary water in the reservoir we would always have good navigation, and through the deep cut there never will be good navigation until this piling is done and it is thoroughly dredged out.

Can boats navigate with success when they are drawing three feet of water.

They can when the water is at top water line, or the ordinary height.

B. M. PUGH.

Josephus Norris, after having been duly sworn and heard the above statement of B. M. Pugh read, adds the following endorsement:

I having heard the testimony of B. M. Pugh read, fully endorse the same as my testimony.

JOSEPHUS NORRIS.

BALTIMORE, O., March 16th, 1872.

JOHN S. SMECK, of the town of Baltimore, and county of Fairfield, in the State of Ohio, of lawful age, being duly sworn, deposes and says:

How long have you been acquainted with the Public Works of Ohio.

I have been acquainted with them since the year 1861, the Ohio canal from Portsmouth to Cleveland, and the Hocking canal from Athens to Carrol.

What is your present business, and since you have been acquainted with canals.

I have been boating and buying grain along the canal, and have been engaged at this point about one year in the milling business.

What is the condition of the canals compared with when leased.

The condition of the canals, from my experience, is far better than when it was first leased. I have a boat now running on the canal, and have much less trouble in navigating them than ten years ago, when there is the usual supply of water.

What has been the condition of the supply of water at your mill for the last two years.

We have done but very little business with the mill, caused by the drouth, producing a failure in the Licking Summit reservoir. We have had no rain in this locality, since the month of January, 1870, that amounted to anything for the purposes of navigation.

What is the condition of the locks, dams, culverts, and aqueducts.

The condition of the locks at Baltimore and vicinity are much better than they have been for several years; the walls have been grouted, and newly sheeted in the bottom, and new mitre sills; and they are as tight as they could be well made. The dam at Little Walnut, near Basil, is in good condition, and the feeder is in good order. I am not so well acquainted with the other dams. Culverts in this vicinity, as far as I know, are all right. Aqueducts, so far I am aware, are in good condition.

Can boats navigate the canals drawing three feet with success.

They can when there is an ordinary stage of water; the Basil level was bad but it has been cleaned out, and is now good.

What is the tonnage of boats.

They carry about sixty tons.

Have the Lessees or their employees used due diligence in keeping up all repairs to supply proper navigation.

Yes sir, they have done all that they could to supply navigation, and have been prompt in making all necessary repairs. The failure of navigation in this locality has been produced by the long continued drouth, such as we have never experienced before; my entire interest mostly is dependent upon the maintainance of the canal.

JNO. S. SMECK.

NELSONVILLE, Tuesday, February 27, 1872.

L. D. POSTON, of the county of Athens, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of this State.

Ever since the first construction of the Ohio canal. In 1832 or 1833, I worked on the Ohio canal below Chillicothe. I have lived in the Hocking

Valley since 1830, and am acquainted with the history of the canal from Carroll to Athens, and have been since it was built.

What is your business now.

Mining and shipping coal and merchandising, and have been shipping coal on the canal for the last twenty years.

Have you shipped coal by the railroad since its completion.

I have not. I have done my entire coal business by the canal. With a good, navigable canal I would average about 500,000 bushels of coal annually.

About how much coal would be shipped from this point, by all the mining companies, annually, with a good supply of water.

Two millions of bushels annually, with an increase. Previous to the completion of the C. & H. V. R. R., we did ship over 3,000,000 bushels annually. The mineral resources of the Hocking Valley are such that, within ten or fifteen years, at the present rate of development, a railroad with a single track, and the canal with its present capacity, would be entirely inadequate to accommodate the mineral interests, and other freights.

Were you acquainted with this portion of the canal when it was leased to the lessees.

I was.

What is the present condition of this canal, as compared with its condition when leased.

My opinion is, that for the last five or six years the canal has been in as good, or even better condition than when leased; but for the past two years there has been an inadequate supply of water, owing to the extreme drouth which prevailed during that period.

During the past two years, at what point in the Hocking canal (from Carroll to Athens) did these difficulties in navigation occur.

From what I could learn, at what is known as the "Lancaster side-cut," fed from the Licking reservoir, which totally failed to supply, the greatest difficulty occurred. In the next, the "slackwaters" of the Hocking river, which became exhausted from the cause named—drouth.

If the Lancaster side-cut had been supplied with water during the period referred to, what would have been the condition of navigation during that time, as compared with its condition at the time the canal was leased by the Lessees.

My opinion is, that owing to the fact that the Lessees dredged the side-cut, and made passing places in it, with a good supply of water the canal would have been as good, if not better, than when it was leased.

When there is a supply of water to fill the canal to top water line, will it permit a boat drawing three feet of water to navigate.

I think there would be no trouble for a boat loaded three feet to go out, except when small bars wash in, during freshets. The Lessees established a gauge office at Logan, to prevent boatmen loading deeper than three feet; since boats were guaged, and forbidden to load deeper than three feet, the boats have made as good, if not better time than when they were not restricted to three feet.

What is the present tonnage of boats navigating the canal.

It will average about sixty tons.

With a good supply of water, can freights be carried on the canal so as to compete successfully, with the railroad.

I think they can.

What effect would the neglect or abandonment of the Public Works of the State, have on the business interests of the Hocking Valley.

The effect would be detrimental, in every sense, by subjecting us to onerous rates of freight, which would be imposed on us by railroad interests. The maintenance of the canal serves as a check to high rates on the railroad at present. My opinion is, that there is, and will be business enough for both railroad and canal, and that both are necessary to transact our business. I own stock in the C. & H. V. R. R., to amount of \$9,100.

L. D. POSTON.

ASHFORD POSTON, of the village of Nelsonville, in said county of Athens, of lawful age, who, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of this State.

I have been acquainted with the Hocking canal ever since it was built, and with other portions of the canal, from Portsmouth to Cleveland, for about twenty years.

What has been, and is now your business.

I followed boating on the canal, for 15 or 16 years, and for the last six or seven years, have been engaged in mining and shipping coal on the canal.

Were you acquainted with these canals when the present Lessees first leased them from the State, if so, what is their present condition, as compared with their condition at the time they were first leased.

I was acquainted with the Hocking canal and the Ohio canal, from Carroll to Columbus. Their condition is about as good as it was when first leased, with the exception of the Lancaster side-cut, which has been greatly improved by the Lessees.

About how much coal do you ship annually, when there is a good supply of water.

If there had been a good supply of water last year, I would have shipped over four hundred thousand bushels of coal on the canal. I had arrangements for the sale of more than that amount, if it could have been shipped. The drouth prevented operations on this canal last year, as well as the year before, to a great extent.

What is the largest amount of coal you have shipped in one year, during a good supply of water.

From 150,000 to 200,000 bushels; but the developments now are increasing the shipments of coal very largely. If a good supply of water could be had, the canal would do a good, large business.

Can a boat loaded to the depth of three feet, when the canal is at its ordinary height of top water line, navigate the canal successfully.

It can. I loaded a great many boats to that depth, during the early part of last season, and they went right through without any complaint.

What has been the difficulty in navigating the canal during the last year or two.

The drouth. For the last year or two, the Licking reservoir almost totally failed to supply the canal. Last year, "Little Walnut creek" first failed, and boats could scarcely get from Lockville to Lockbourne, while there was a good stage of water in the Lancaster side-cut.

What was the tonnage of boats when the canal was first opened, and what is a fair average of the tonnage of boats at the present time.

When canal was first opened, about forty to fifty tons was the average. At the present time, I think, boats carry about sixty tons.

What reason do you assign for the fact that boats carry more now than they did formerly.

The boats are now built larger than they were then, and of different shape.

What knowledge have you of the use of water-power by millers or others, from the canal between Athens and Carrol.

At the present time, I know nothing of that matter; but when I followed boating, navigation of the canal was frequently impeded materially, by parties using the water to a greater extent than they were entitled to.

Do you know anything about the rebuilding of any permanent structures belonging to the canal by the Lessees.

I know they repaired the Nelsonville dam, and also repaired locks and put in new gates.

A. POSTON.

JOHN DREANY, of the village of Nelsonville, in said county of Athens, of lawful age, who being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of the State of Ohio.

I have been acquainted with them for the last thirteen years, having been a boatmen for that period. I boated from Portsmouth to Cleveland, but have mostly been on the Hocking canal, from Nelsonville to Columbus, and from Nelsonville to Circleville and Chillicothe.

Were you acquainted with the portions you have boated on at the time the State leased the canals to the present company of Lessees; if so, what is their condition at the present time, as compared with their condition at the time when first leased.

I was. Their present condition is a great deal better than it was when they went into the hands of the Lessees, when there is a sufficient supply of water. But for the last two years, the drought that prevailed, prevented a supply of water. The Lancaster side-cut was almost impassible when the Lessees took the canal; but they have dredged it, and its navigation is greatly improved. In good water, good time can be made over the side-cut, which was in better condition than I have ever known it, for the last five or six years, until the drought came on.

Are you acquainted with the locks, dams, culverts and aqueducts on the portions of the canal you have been on. If so, what are their present condition.

I am. In my opinion they are as good, if not better than when leased. The Lessees put in a great many new lock gates, rebuilt the lower lock at Winchester, put in a new lock at Lockville, and repaired a large portion of another at Lockville; they rebuilt the Rager culvert, below Winchester. They also did a great deal of work in repairing dams.

Have the Lessees kept up the general repairs in a manner equal to that in which repairs were kept up while the canals were under the control of the State.

I think they have kept up general repairs better than the State did. The Lessees have had a great deal to contend with; high waters have made breaches in the canals several times, some of them being of very extensive character. One, at Foresman's mill, near Circleville, which it took about six weeks work to repair. The dam below Chillicothe (Tomlinson's dam) was also swept away and largely damaged; and the embankment between Jasper and Waverly was washed away, and replaced by the Lessees, by a dam acting as a waste weir. Once the flood washed away the embankments in the Columbus side-cut, and made bars in the

canal. These were promptly repaired and removed by the Lessees. Many other occurrences of the kind happened of less magnitude.

In what condition were the locks and gates and mitre-sills kept by the Lessees. Were they tight and free from unusual leakage and an improper waste of water.

The locks, gates and mitre-sills were, as a general thing, kept in good condition. When, from any cause, they got out of order, I think they were promptly repaired.

Could boats which were built ten or twelve years ago carry as much freight as the boats built at a later period, say within five years.

I can see little difference in their capacity in that time. But boats which were built twenty or twenty-five years ago had less capacity than those built later. I believe the old boats would not average more than thirty or forty tons tonnage. The boats built within the last few years have a larger capacity—averaging from sixty to sixty-five tons.

Can boats drawing three feet of water successfully navigate the portions of the canal with which you are acquainted when there is a full supply of water.

They can. After the Lancaster side-cut was dredged the last time, we could make regular trips from Nelsonville to Columbus. I have made the trip from Nelsonville to Columbus, in good water, in from three to four days, running only in day time. This is much better time than it could have been made in prior to the time the side-cut was cleared.

Have the Lessees reduced the tolls on freights since the completion of the Columbus & Hocking Valley Railroad. If so, how much.

They have reduced the rates of tolls on the item of coal about 25 per cent., I think. With a good supply of water, we can compete with the railroad in carrying coal.

JOHN DREANY.

JAMES FREER, of the village of Nelsonville, in said county of Athens, of lawful age, who, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of the State of Ohio.

About six years. I am acquainted with the canal from this point to Columbus, and from Portsmouth to Newark.

What is your occupation.

I am a boatman, and have been for about six years.

From your knowledge of the Public Works, do the Lessees keep up repairs on them in such a way as to render the canals navigable.

They have done so. The canals were in good condition until the drouth came and cut off the supply of water.

Can boats drawing three feet of water navigate the canal without difficulty, on the portions you are acquainted with.

They could, when the canal was up to top water line, and was not affected by the drouth.

Do you know the size of boats used on the Hocking canal—that is, their tonnage.

I do. They can carry, on full water, from sixty-five to seventy tons.

Have you had any difficulty, during your experience as a boatman, in carrying such loads as you have just mentioned, except since the drouth set in.

I have not generally had any difficulty worth mentioning.

Do you experience any difficulty in navigating the Lancaster side-cut when there is a full supply of water.

I do not. For the past three years the Lancaster side-cut has been as good as any part of the canal; when the water was good, we could make as good time there as at any other place in the canal.

Have the locks, gates and mitre-sills been kept in such repair as to prevent any unusual or improper waste of water.

The locks and gates have been kept in good repair by the Lessees, and generally so as to prevent any unnecessary waste.

Have the Lessees kept up the repairs and rebuilt locks, dams, aqueducts and culverts in permanent manner.

They have kept them up in a manner to give good and sufficient navigation until the drouth suspended operations.

Have the Lessees made any reduction of tolls on the article of coal, since the completion of the railroad. If so, how much.

They have made a reduction—I think it was about 25 per cent.

What is your opinion of the ability or power as carriers of freight, on the canals, to compete with the C. & H. V. R. Co. successfully.

I think the canal can compete with the railroad in carrying such freight as coal, iron, lumber, salt and other heavy freights.

At what points on the Hocking canal have boatmen experienced the greatest interruptions or obstructions to navigation, prior to the last three years.

At the Lancaster side-cut, at Bonar's bar, and at Green's bar, the greatest obstructions existed. These were all dredged out by the Lessees about three years ago. They also dredged out the "Logan Neck," the "Chauncey Neck," and a "neck" near Athens.

Are there any formidable bars now in existence, which would obstruct navigation when the canal is full at top water line.

There are none, to my knowledge. I have not done any boating since last fall, but there were none then.

Is there grass in the Hocking canal (in the grass season), in sufficient quantity to impede navigation at any point, to your knowledge.

There are but two places, to my knowledge: one near Wolf's Basin, about one-fourth of a mile long; the other at Workman's Basin, which is nearly a half mile long; but neither of these would form much of an obstruction.

Do the Lessees generally have the grass, at these points, cut during the grass season.

They do.

JAMES FREER.

JOHN BURBERY, of the village of Nelsonville, in said county of Athens, of lawful age, who, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of the State of Ohio.

I have been acquainted with the Public Works about fifteen years.

What is your business now.

I have been and am now shipping coal on the canal, as agent for Mr. L. D. Poston. I have been so engaged for about 15 years.

Were you acquainted with the condition of the canals at the time they were leased by the State to the present company of Lessees. If so, state what is their present condition as compared with their condition at the time they were first leased.

From the best information I can gain, from personal observations and other sources, the present condition of the canal is as good, at least, if not better, than it was when first leased. In an especial manner, the Lancaster side cut has been improved.

What is the average tonnage of boats on this canal.

They will carry from sixty to seventy tons.

Is there any difficulty in boats, drawing three feet of water, navigating the Hocking canal at top water line.

There is not any difficulty.

Will the canal, when in good navigable condition, compete with the railroad in carrying freights.

I think there is no doubt that it can.

Is there any difference between the capacity of boats now and those used ten or fifteen years ago.

I think not. The boats now carry about as much freight as they did then.

Is there any general complaint, within your knowledge, against the manner in which the Lessees have kept up repairs of the canal, since they have had it.

There have been some complaints, more particularly since the drouth set in, from scarcity of water; and also, some complaints occasioned by leakage of lock gates.

Do you know what amount of coal is shipped from here by canal, in the aggregate, annually.

I have not the means to state the amount accurately, but suppose the aggregate amount to be from 1,500,000 bushels to 1,800,000 bushels.

Can you state the comparative amount of rain fall for the year 1870 and 1871, comparing it with the rain fall for previous years.

The rain fall for the years 1870 and 1871, was less than it ever was before since I have been in the valley, and more particularly that of last year, Hocking river being lower than ever before to my knowledge.

What is the average condition of the canal, as regards its depth of water in ordinary seasons, when no drouths have occurred.

In such seasons, the water is generally about top water line, permitting boats drawing three feet to navigate without difficulty.

What in your opinion, are the prospects for the development of the mineral and other resources of this valley, for the supply of business for the canal.

In my opinion, the prospects are very flattering at this time, for the speedy and thorough development of the resources of the Hocking Valley; new companies are forming, and capital is being largely invested in opening new coal mines, new salt wells, and other enterprises, increasing the amount of freights for both railroad and canal very largely, prospectively.

JOHN BURBERRY.

GEORGE FREER, of the village of Nelsonville, in said county of Athens, of lawful age, who, being first duly sworn, deposes and says:

Are you acquainted with the Public Works, if so, how long have you been.

I am, and have been acquainted with the Ohio canal from Massillon to Cleveland, from the year 1853 until May, 1864, when I came to Nelsonville. Since May, 1864, I have been acquainted with the Hocking canal.

Have you any knowledge of the manner in which the canal has been kept up by the Lessees, since the year 1864.

From my best information, I believe the locks, dams, and other structures, have been well maintained by the Lessees, since that year.

What is your business at this time.

I have been engaged in building and repairing boats for the last eight years, on my own account; prior to that time, I worked at the same business for another man, about six years. I was also a boatman for two seasons.

Is there any difference in the models or styles of building boats, now, and those used ten years ago by boat builders.

There is not much difference in the models used now, but boats of the same size now are built much lighter than they were then. A boat built ten years ago, would weigh from twenty to twenty-three tons; one of the same size built now, would weigh from sixteen to eighteen tons, and will carry five tons of additional freight.

What is the average tonnage of boats used on the Hocking canal.

First class boats, drawing three feet of water, will carry from sixty to seventy tons.

What has been the amount of rain fall during the past two years, as compared with that of former years, in this locality.

It has been very small, less in amount than during any corresponding period since I have resided in this valley.

What in your opinion, are the prospects for the development of the mineral and other resources of the Hocking valley, for the supply of freight and business for the canal in the future.

My opinion is, that the prospects are good for the supply of an amount of freight and business sufficient for both railroad and canal.

GEORGE FREER.

LOGAN, February 28, 1872.

SAMUEL BOARDMAN, of the county of Hocking, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of this State.

I have been acquainted with the Hocking canal for about twenty years, and I reside below and near Logan, on said canal.

What is your business.

Saw-milling and lumbering, at lock No. 17, I think, using the water power from the canal.

How much water power have you leased at that point.

I have leased the surplus water not needed for navigation.

Do you experience any difficulty in the use of the water power.

I have all the power and conveniences I ever anticipated, and have never lacked for water to exceed one week in a year, except when drawn off for repairs; I don't use more than one-third of the power.

Are you acquainted with the locks, lock gates, and mitre sills, on the Hocking canal, and is there any unusual or improper leakage in them.

I am acquainted with four or five locks, in the vicinity of Logan, and they are in a condition to maintain navigation, and there is no unusual waste of water.

Were you acquainted with the Hocking canal at the time it was first

leased from the State, by the present company; and is the canal in as good condition now as when they leased it.

I was acquainted with the canal when the State first leased it to them; and for the last three years, the water has been kept more uniform in the levels, and better facilities for navigation, than I ever knew it before.

At the time the State leased the canal, was there any great difficulty experienced in navigating it at any particular points.

At the Lancaster side-cut, there was and always has been difficulty during dry seasons, and sometimes during wet seasons; of late years they have been getting through with less difficulty, when there was a full supply of water.

Has there been any scarcity of water in the last two or three years, and if so, what was the cause in your opinion.

The greatest trouble was at the Lancaster side-cut, and was caused by the want of rainfall or drouth.

And further the deponent saith not.

SAMUEL BOARDMAN.

J. W. JAMES, of lawful age, being also duly sworn, deposes as follows: How long have you been acquainted with the Public Works.

I have been on the canal for fifteen or twenty years.

What is now your business.

Boating.

Were you acquainted with the canals at the time they were leased to the present company, and if so, what is their condition now compared with then.

I was acquainted with the canals at the time they were leased. The Lancaster side-cut is better now than it was then; there are other places in the canal not so good as then; there is a gradual annual accumulation; at certain places it is worse, more particularly where branches come into the canal.

When the water is on this canal at the ordinary height, or about top-water line, can boats drawing three feet of water successfully navigate.

Yes, sir, they can, but not to make any time; boats loaded to three feet will generally stick five or six times between here and Columbus. At times, when the canal is very full, they will not stick at all.

What is the tonnage of boats on the canal at this time.

About 50 tons of iron, or about 60 tons of coal.

Is there any difference in the size of the boats now navigating the canal, and those navigating it at the time it was first leased.

They are about the same.

Are you acquainted with the locks, dams and aqueducts, and if so, what are their condition.

I am acquainted with the locks and aqueducts. Britt's Lock is in very bad condition; I had to open it with my team; I don't know where the leakage is, but think it is caused by leakage of the lock; there is no other lock on the Hocking canal wasting sufficient to reduce the level. On the Ohio canal, between Carrol and Circleville, the locks at Lockbourne, are in a very leaky condition and wasting water; the aqueduct at Circleville leaks some, but not very much; I don't know much about the dams.

Are the present lessees using their best endeavors to keep the canals in good repair, as far as you have knowledge of them.

The largest portion of the Hocking canal is better than before it was

leased. Before the lease they had to assist boats out of the Lancaster side-cut with cattle, but since they dredged it, four horses can take a three-foot boat out when the level is full. The canal, from a point four miles below Lockbourne to Circleville is in bad condition; wants bottoming out and widening. Their repair-men are always on hand to repair breaches without delay.

Is there any grass to impede navigation.

On the Hocking canal, from Nelsonville to Carrol there is no grass; from Nelsonville to Athens there is some grass; from Carrol to Circleville there is scarcely any.

And further deponent saith not.

J. W. JAMES.

ROBERT WRIGHT, of lawful age, also being duly sworn, deposes as follows:

How long have you been acquainted with the Public Works.

I have been acquainted with the Hocking canal since 1836, and I had a contract for building a portion at this point in 1838, and subsequently in 1839, another portion in Athens county, at Workman's Lock.

What is your business now.

Milling at the Falls Dam, on the Hocking river and canal.

Were you acquainted with the Hocking canal at the time it was leased to the present company.

I was.

What is the condition of the canal at this time, compared with its condition at the time it was leased.

The condition is about the same.

To the best of your information, have the present company used due diligence in keeping up the repairs of the same.

I think they have.

What is the condition of the locks, culverts, dams and aqueducts at the present time.

I think, so far as I know, they are in good condition.

What is the tonnage of boats now compared with what it was when the canal was leased.

About the same capacity; sixty tons to a full loaded boat.

Within the last 10 or 15 years, have you experienced much inconvenience from lack of water.

We have had more inconvenience within the last two years, than at any other time during the last 10 or 15 years, caused by extreme drouth.

And further deponent saith not.

R. WRIGHT.

IRA W. GAGE, of lawful age, also being first duly sworn, deposes as follows:

Are you acquainted with the Public Works of Ohio, and if so, how long.

Yes, sir, for ten or twelve years, and have been engaged in tending lock and boating on the Hocking canal up to the last year; had two or three boats employed.

On what portions of the canal did you commonly boat.

From Logan to Cleveland, and from Logan to Lancaster and Columbus, and sometimes to Circleville and Chillicothe.

Were you acquainted with the condition of the canal at the time it was leased to the present company of lessees, and if so, what is their condition now compared with then.

I was acquainted with it at that time, and in my opinion its condition under the management of the lessees is quite as good, and in some places better than before.

What points on the canal are now in better condition than they were before.

One point very much better is the Falls Mill; it was dredged out and widened; it is decidedly better at the Furnace; the Lancaster side-cut is better since they dredged it than ever before.

Are the dams, aqueducts, culverts and locks in as good repair as when leased to the company, and do you know of any repairs put upon them since the lease.

In my opinion, they are in a better shape; the wood-work of the guard-lock at the Falls Mill was entirely rebuilt, and the dam at Falls Mill was kept in good condition, so as to prevent waste of water. I know of a number of new gates having been put in, from time to time, at different places.

What was the tonnage of boats on the canals.

Fifty tons of pig iron, and from sixty to sixty-five tons of flour, wheat and coal.

Can a boat loaded down three feet, successfully navigate the canals.

Without any difficulty, when there is a full supply of water.

Was there generally a full supply of water during the last ten years.

There has been a fair supply of water except during drouths, and especially the extreme drouth during the last two years.

Has there been any unusual or improper leakage at the locks or gates.

I think not.

Are the Lessees using due diligence in promptly keeping up repairs and preserving navigation.

Whenever there has been breaches in case of high water, they were always promptly on hand.

And further deponent saith not.

IRA W. GAGE.

D. A. MILLER, of lawful age, being first duly sworn, deposes as follows:

How long have you been acquainted with the Public Works of this State.

For eight or nine years; with the Hocking canal from Athens to Columbus and Circleville.

What is their condition now compared with when you first became acquainted with them.

I think they are better; in the opening of the channel on the Lancaster side-cut, by dredging it out. The neck at the Falls Mill is better by having been dredged out.

Have the Lessees kept the permanent structures in good condition by repairing and rebuilding the same when necessary.

They have so far as I know.

What is your business.

Collector of canal tolls at this point and am in the grocery business.

Are you acquainted with the amount of tonnage usually carried on the boats navigating the canals.

I am. They average about fifty tons of pig iron, and about sixty tons of coal.

Can a boat drawing three feet of water navigate the canal successfully when there is a supply of water.

They can without trouble when there is an ordinary stage of water.

What means have you of knowing this.

I have assisted in gauging boats, to three feet, at this point to pass out the Hocking canal; and they made successful trips.

And further deponent saith not.

DAVID A. MILLER.

PORTER ALEXANDER, of lawful age, being duly sworn, deposes as follows:

How long have you been acquainted with the Public Works of this State.

Since the year 1857.

What is your business at this time.

I am now boating, and have been since the year 1857.

You were then acquainted with the canals at the time they were first leased to the present Lessees.

I was.

What is the condition of the canals now compared with what it was at the time they were first leased.

I think the canals are in as good order as when leased, when there is a supply of water.

Has there been any want of supply of water.

On account of unusual drouths, during the last two or three years, there has been a lack of a supply of water, from failure of Licking reservoir and other feeders.

What, according to your knowledge, is the condition of the permanent structures on the canal from Athens to Columbus.

The locks are in as good condition as at any time since I have been on the canal. There is no unusual and improper waste of water. The Monday creek aqueduct was sustaining its full weight of water, the level being to top water line last summer when I was there. I don't know the condition of the dams, but think they were in good order, as they always afforded their full supply of feed.

What tonnage will the boats now carry on this portion of the canal.

They will carry fifty tons of pig-iron, or sixty tons of coal on three feet of water.

Do you have any trouble in navigating the canal with a boat drawing three feet of water, from Nelsonville to Columbus.

Last spring, up to July, when there was a full supply of water, I made eight trips to Columbus without any trouble, towing through with one pair of mules, my boat drawing about three feet of water.

Have the employes of the Lessees promptly repaired all breaches which have occurred.

Yes, sir; so far as I know. At various times when I have been detained by breaks, they promptly repaired them.

Is there any difference between the size of boats now and ten years ago.

Yes, there is a difference; they are now building boats of more tonnage.

Has there been any formation in the canals to lessen their dimensions, and, if so, has it increased much since the Lessees have had the canals.

I think there has been some, but not much during the last ten years.

And further this deponent saith not.

PORTER ALEXANDER.

DAVID HAND, of lawful age, being first duly sworn, deposes as follows :
How long have you been acquainted with the Public Works of this State.

Since the year 1865, with the Hocking canal.

What is your occupation at this time.

I am a coal dealer.

Have you been engaged on the canal at any time, and, if so, at what.

In 1865 I was employed by the Lessees to gauge the boats at Logan. I gauged about five years.

To what depth were these boats gauged.

To the depth of three feet.

Did you ever hear any complaints in navigating the canals when gauged at that depth.

Not when there was a supply of water.

Have the employes of the Lessees shown proper diligence in making repairs on the canal.

Yes, sir, so far as I know.

What means have you of knowing.

Being employed as gauger, I had every opportunity of knowing of breaks from boatmen, having been frequently requested by them to notify the foreman of the repair boat of this division, which I did, on several occasions, which was promptly responded to by him.

When the water was at top water line, did boats make their regular trips in good time.

I feel satisfied that they did; when there was a good stage of water there was no trouble.

What is the tonnage of boats on this canal.

There are two classes of boats; the older class will carry 50 tons of pig iron, drawing three feet; the newer class, which are larger and built of lighter material, will carry from 60 to 65 tons of pig iron, drawing the same amount of water.

Why is this difference in their carrying capacity.

It is in their model; the old class being sharp at the bow and stern, and bottom much rounder on the knuckle; and the newer class is squarer on the knuckle, making a broader bottom, the bow and stern also being built more square.

And further this deponent saith not.

DAVID HAND.

ANDREW MCKINNEY, of lawful age, being first duly sworn, deposes as follows :

How long have you been acquainted with the Public Works of Ohio.

For twenty years, at least.

What has been your business.

I have been a boatman during the greater part of the time for the last 20 years.

Were you acquainted with the canals when first leased to the present Lessees.

Yes sir, I was.

What is the condition of the canals now, compared to what it was when they were first leased.

When I quit boating, some four years since, they were in better condition than when first leased.

Have the lessees kept up the permanent structures on the canals in a good substantial condition.

They kept up all those structures in good repair. Have seen them putting in new gates at several places—Sugar Grove, Boardman's and Pattonville; saw them put in a new culvert at Winchester; saw them rebuilding one lock at Lockville and repairing another at the same place.

Were the locks kept in a condition to prevent leakage, or an improper waste of water.

In most cases they were; in some cases there was improper waste.

Did the employes of the Lessees keep up the repairs so as to prevent unnecessary delay in navigation.

Yes, sir, they did, so far as I have any knowledge.

When you were boating, could you load your boats so as to draw three feet of water, and navigate without any difficulty.

Yes, sir, when there was an ordinary stage of water.

What was the amount of tonnage you carried on your boats during an ordinary stage of water.

From 50 to 55 tons of pig iron, and from 60 to 65 tons of coal.

What is the condition of the Lancaster side-cut now compared with what it was when the Lessees took it.

I think it was considerably better the last time I was through it, being about two years ago.

In what manner have they improved it.

I know it to have been dredged out in 1868, I think; I saw it being done.

Is the passing on that side-cut any better than it formerly was.

Yes, sir, the boats can now pass at different points, prepared for that purpose.

Do you know of any improper use of the water having been made by mill owners.

I know of the level at Reams' mill being drawn down below the proper level for navigation, and also the level at Boardman's, and have also seen the Pattonville level down.

And further this deponent saith not.

ANDREW MCKINNEY.

LANCASTER, Thursday, March 7th, 1872.

JAMES V. KINNEY, of the city of Lancaster, in the county of Fairfield, in the State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of the State. It has been about fourteen years. During this time I have been prin-

cipally acquainted with the Hocking Canal, from Athens to Carroll. I have also boated on the Ohio Canal, from Portsmouth to Cleveland.

What is your present business.

I am a coal dealer on the Hocking Canal, residing in Lancaster, and I have a boat running on the Hocking Canal.

What is the condition of the canal now, compared to the condition when first leased to the present company of Lessees.

The general condition of the canals that I have boated on is, now, about the same as when leased, with the exception of the annual wear and tear of the permanent structures.

Are you acquainted with the locks, dams, culverts and aqueducts on the portions of the canal that you have been on; if so, what are their present condition.

I am acquainted with them, and in my opinion, they are in about as good condition as when leased, except natural wear and tear, and such extra wear and tear on the lining of some of the locks as arose from dragging, or forcing boats into them, owing to the scarcity and low stage of the water, from drouth.

Within your knowledge, have the Lessees rebuilt, or repaired any of the permanent structures above mentioned.

At Lockville, one lock was rebuilt and one repaired; and the lower Winchester lock was repaired and a number of new gates replaced. There were three dams repaired on the Hocking Canal. Below Winchester, one new culvert was put in. There were no repairs to aqueducts, to my knowledge.

What is the present condition of the Lancaster side-cut (compared with when first leased) for the purposes of navigation, provided there was a sufficient supply of water to fill the canal to top water line.

It is as good as it was then, probably better. I say better, because there are more passing places, and by dredging the channel at points, it is deeper.

Is the accumulation of sediment at any point sufficient to impede or render navigation difficult, when the canal is at top water line.

When the canal is at top water line there is no difficulty about navigation, from sediment or deposits.

Does grass exist to any extent on the Hocking Canal.

At two points on the canal, to wit, the Britch level and Workman level, it has accumulated, at each place, to the extent of about a half mile, and this past year is beginning to make its appearance at several other points.

Can boats navigate the Hocking Canal successfully, drawing three feet of water.

Yes, they can navigate, drawing three feet of water, if the canal is at top water line.

Has the difficulty of navigation on the Hocking Canal, for the last two years, been owing to any neglect of the Lessees.

It has not; in my opinion, it is from the lack of water to supply the canal, owing to the extreme drouth.

What is the tonnage of boats on the Hocking Canal.

From sixty to sixty-five tons, on good water; and during the dry season, so far as there was any water at all, it was, on the average, about fifty tons.

How long was navigation through the side-cut suspended from lack or supply of water.

From the last of July to about the 25th of January last.

JAMES V. KINNEY.

JEREMIAH DILDINE, of the city of Lancaster, county of Fairfield and State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the canals of Ohio, and what portions of them.

It has been about 20 years since I first commenced boating. I first commenced boating on the Ohio Canal, from Portsmouth to Cleveland. For the last ten years, I have been boating on the Hocking Canal.

What business are you engaged in at this time.

I am boating.

What is the condition of the Hocking Canal now, as compared with its condition when leased.

The condition of the Hocking Canal is as good now as when first leased, except the sheeting in the locks and the miter sills.

To what extent does this difficulty with the sheeting and miter sills exist, in the locks of this canal and the Ohio Canal, at Columbus.

This difficulty exists principally with the Lockbourne, Lockville and Lancaster locks; also the upper Carroll lock. And the lower Sugar Grove lock leaks some. The gates are kept in as good condition as when the canals were under the control of the State.

What is the present condition of the lock walls, dams and culverts, on the Hocking Canal and Ohio Canal, and Columbus side-cut to Columbus.

I consider the lock walls, and dams and culverts, to be in as good condition as when they were first leased. There were two locks rebuilt at Lockville, and the lower Winchester lock was rebuilt; and the Hesser lock was, in part, rebuilt. There were repairs made on the Sugar Grove dam, and Lockbourne and Lockville dams; and their condition is such as to prevent a waste of water. The Rager culvert, near Winchester, was rebuilt.

What is the present condition of the Lancaster side-cut, compared with its condition when first leased.

I consider it in better condition than when the State had it. It is better cleaned out; the boats can pass better; there are any amount of places now in which boats can pass. The Lessees have dredged out the canal, and attended to the feeders better.

Is the accumulation of sediment and dirt such, at any point, as to impede navigation.

There is no point, except at the Summit bridge, where navigation is impeded, when the water is at top water line.

Does grass form any obstruction to navigation in the Hocking Canal.

There is but one point, and that is at Britt's level, which is about one-half mile. I have no knowledge of the canal beyond Nelsonville to Athens.

Have the Lessees used proper diligence to rid the canal of this grass.

In the Hocking Canal there has never been much trouble about it, as far as I have gone. The grass has been cut, but I did not see them cutting it.

Can boats navigate the Hocking canal, drawing three feet of water, successfully.

They can, when the canal is full.

Has the difficulty of navigation on the Hocking canal, in the last two years, been owing to any neglect of the Lessees.

No sir, don't think it has been; it has arisen for want of water, from lack of rain to fill the reservoir, from which the canal is supplied at the Licking Summit.

What is the tonnage of boats on the Hocking canal.

From fifty-five to sixty tons, in a full stage of water, and during the last two years, since the drouth, the average has been from 40 to 50 tons.

How long was navigation through the Lancaster side-cut, suspended for the want of water.

In the fall of 1871, it was suspended about three months.

Do any of the mills interfere with the navigation of the canal.

The Shadeville, the Ream and Sargrove mills do, as I believe; and I think they are not properly gauged.

his
JEREMIAH X DILDINE.
mark.

LEWIS BOYER, of the city of Lancaster, county of Fairfield, and State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the canals of Ohio, and what portions of them.

I commenced boating about 24 years ago. I am acquainted with the Ohio canal from Portsmouth to Cleveland, and have been acquainted with Hocking canal and Columbus side cut for 10 or 12 years.

What is the condition of the Hocking canal now, as compared with its condition when leased.

I consider the Hocking canal in about as good condition as when leased.

Are you acquainted with the locks, dams, culverts and aqueducts on the Hocking canal, and Ohio canal, and Columbus side-cut to Columbus.

The dams I can't say much about; the lock walls, the lock gates, and the mitre sills and lock flooring, are about in as good condition as when leased; some of the locks are better, and some are not as good. I speak on the average.

What permanent structures have the Lessees rebuilt or repaired within your knowledge.

There have been two locks rebuilt at Lockville; a new culvert was put in below Winchester, called Rager's culvert, and the tow path side of the lower Winchester lock has been rebuilt. There has been work done on the dams; but to what extent I am not able to say. There have been a large number of new lock-gates put in, and I consider them in as good condition as when leased.

What is the present condition of the Lancaster side-cut, compared with when first leased for the purpose of navigation.

It is in better order for navigation now than when leased, when there is a sufficient supply of water.

Has there been any lack of supply of water of late, and if so, is it from any neglect of the Lessees.

There was a lack of supply of water in 1871, which was owing to deficiency of water in the Licking reservoir for want of rain. Had this reservoir been full, there would have been navigation the year round.

Does the grass form any obstruction to the navigation of the Hocking canal.

It does, on one or two levels, to-wit.: the Britt's level and the Haydenville level.

Do the Lessees cut the grass at proper times.

They cut it at proper times.

Can boats navigate the Hocking canal, without difficulty, drawing three feet of water.

They can, when the levels are full.

Has the difficulty on the Hocking canal, in navigating the same during the last two years, been owing to any neglect of the Lessees.

It has not; it has been from extreme drouth.

What is the tonnage of boats on the Hocking canal.

When the canal is full, about 60 tons; but during this drouth, from 40 to 45 tons.

How long was navigation through the side-cut, from want of water, suspended.

About five or six months.

Have you any knowledge of the mills having used water so as to interfere with navigation.

I have known some of the mills to be running when the water was down in the levels from eight to ten inches.

What mills have been doing this.

The Sugargrove mill and Ream's mill on the Hocking canal; the Shadeville mill on the Columbus side-cut, and the Adams' mill at the foot of the 18 mile level, just above Chillicothe. Boardman's saw-mill on the Hocking canal, also used more water than it was entitled to, and the mills at Waverly did the same.

Are the banks of the canals being properly preserved, and kept at their proper heights.

They are; and are sufficiently strong to hold the water.

Have the employes of the Lessees promptly repaired all the breaches, and kept up the usual repairs, so far as you know.

They have been repaired; but some of them have not been repaired as promptly as they might have been, for instance: I have known holes in tow-path bridges, which have not been, sometimes, repaired as promptly as they should have been; but I cannot now specify the particular bridges; all breaches or repairs of importance have been promptly attended to and fixed.

Do you know of any unusual, or improper waste of water, through the locks.

No I don't know of any; the water in the levels were usually uniform.

Have the Lessees conformed to the toll sheet authorized by law.

I can't say what the lawful toll sheet is; but I do know, that the tolls were reduced about (as I suppose) 25 per cent. on coal, iron, salt and wheat.

LEWIS BOYER.

NICHOLAS ROWE, of the city of Lancaster, in the county of Fairfield, in the State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of the State.

About 25 years. The Ohio canal from Portsmouth to Cleveland, the Columbus side-cut, and the Hocking canal, from Athens to Carrol.

What is your present occupation.

I own and am running a boat.

What is the condition of the canal now, compared with the condition when first leased to the present company of Lessees.

I think the condition now is about as good as then, and there is no particular trouble in boating when the levels are full.

Are you acquainted with the locks, dams, culverts and aqueducts on the portions of the canal which you have been on; if so, what are their present condition.

So far as the locks are concerned, I am acquainted with them—they are in about the same condition as when they were leased; some of the gates leak badly, and others are in as good condition as locks usually are. So far as the dams, culverts and aqueducts are concerned, I can't speak as to them.

Is the Lancaster side-cut at this time in good boating condition, with a proper supply of water.

I think the side-cut is good enough, if we had water to fill it up, with the exception of some bars at Bush's and Lusk's feeders, and a shallow place at the Summit bridge, and which wash in more or less at every freshet.

Can boats navigate the Hocking canal successfully drawing three feet of water.

They can, where there is water enough to keep the levels up.

Has the difficulty of navigating the Hocking canal for the last two years been owing to any neglect of the Lessees.

I know of no neglect on the part of the Lessees; the difficulty was owing to the failure of water in the Licking reservoir and other feeders; owing to the extreme drouth.

What is the tonnage of boats on the Hocking canal.

In a full stage of water, they carry from 60 to 65 tons; and in the last two years, during the low stage of water, 60 tons.

Have the Lessees conformed to the toll-sheet authorized by law.

I am not sufficiently informed to answer that question.

Within your knowledge have the mills interfered with navigation.

Yes, sir, I think they have a great deal—the Sugargrove Mill and Ream Mills, on the Hocking Canal; they have some way of drawing the water down, but I don't know how.

N. ROWE.

HARLOW WHITE, of the city of Lancaster, in the county of Fairfield, in the State of Ohio, of lawful age, being first duly sworn, deposes as follows:

How long have you been acquainted with the Public Works of the State.

About 26 years—and, off and on, with the Hocking canal for 25 years.

What is your present occupation.

I am foreman on the Hocking Canal.

Were you acquainted with the Hocking canal when leased to the present company; if so, what is its present condition as compared with then.

On some of the levels it is better now than then, and on others, not any better; from Lancaster down, and on the side-cut, a good deal better.

On the Lancaster side-cut, in what particular has it been improved.

Our main trouble used to be at the Claypool feeder, and now it is between five and six feet—the same having been dredged out; we have more passing places, and, above and below the Claypool feeder, the canal was dredged about three-fourths of a mile.

What is the condition of the locks, dams, culverts and aqueducts, on that portion of the canal of which you have charge, compared with when leased.

The locks we have overhauled every spring, and made them as tight as we could get them. We put in several new gates, but I can't say how many; we grouted the Stone Quarry lock and the lower Sugargrove lock. We rebuilt the Sugargrove dam; the other dams are in about the same condition—wear and tear excepted. The culverts are about the same as they were. On my division there are no aqueducts.

Is there an accumulation or deposit in the canal now, any worse than when they were leased.

On my division there has been an accumulation on two levels, but we have raised the bank about four inches, so that the water is as deep as it ever was on these levels. In the slackwaters at Boner's lock and Green's, it has been improved by being dredged out—Boner's lock being the lower end of my division.

Does the grass form any obstruction to navigation on your division.

There is no grass on my division.

What is the usual tonnage on the Hocking canal.

In good water 65 tons; in short water from 55 to 60 tons.

How long was the navigation on the Lancaster side-cut suspended.

About five months, for want of water, caused by drouth, there being no supply from the reservoir or other feeders.

Do any of the mills on your division interfere with the navigation of the canal.

The Sugargrove and Ream mills do; the Sugargrove mill has no gauge, and the Ream mill has a partial gauge; I have stopped these mills four times, for improperly using the water, during the last summer.

Have you promptly attended to all repairs and breaches on your division so as to cause no unnecessary delay.

I have.

Were you engaged with the dredging boat on the deep cut, near Milersport, last fall, and what was the work performed.

I went there on the 24th day of June, and ended the 11th day of September. We dredged 7,237 feet in length of the canal. About one-half of this was double-dredging, being about 35 or 40 feet in width; the balance was single dredging, about 20 feet in width. The average depth was about two feet and a half in the centre. The average cutting at the sides was about three and a half feet. This is about half the distance through the deep cut; but it will still require one-fourth mile as deep dredging as the above; the balance will require an average dredging of about two feet in the centre. The dirt dredged out was deposited on the side of the bank, and protected by pile staking.

HARLOW WHITE.

CARBOLL, O., March 8, 1872.

THOMAS ST. LEGER, of the town of Logan, in the county of Hocking, in the State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of the State.

Have been acquainted with the Hocking canal about twelve years, at which time I was foreman about one year, and have been acting in the capacity of foreman for the last four years.

What is the condition of the Hocking canal now, compared with the time when first leased.

The Hocking canal is in better condition now than then, having been improved by dredging out the bottom at various points, more particularly the Lancaster side-cut, which is deeper, and permits the passage of boats at points heretofore impossible. The necks at the slack waters, at Green's, Boner's, Lock Falls Mills, Chauncy and Athens, all having been well dredged.

What is the condition of the permanent structures. Are they as good as when first leased.

They are in as good condition, and better.

In what manner have they been improved.

There has been new cribs built to the dams, and been leveled up by old timbers being taken out and new ones put in, and new sheeting been put on, and well protected, with stone and gravel, put in to tighten it. The locks have been repaired by being grouted in the walls, where they leaked. About twenty-five pair of lock gates, on the lower division from Sugar Grove to Athens, have been put in the last four years. The wood work of five slope wall locks have been renewed and planked. The aqueduct at Monday creek was repaired by putting in new cords and new roofing, being the only aqueduct we have on the Hocking canal. There has been no addition made to any of the culverts, they being in as good condition as when leased.

Are the towing path and berme bank in as good condition as when leased.

They are in good order, to the best of my knowledge.

Has the towing path or berme bank been raised for raising the water on the level, instead of bottoming it out.

I have not raised the banks for that purpose, but I have put a narrow strip on the waste weir, to prevent the waste of water in dry weather, nor has it been done by others to my knowledge.

Do you promptly repair all breaches when the same occur, and cause no unnecessary delay of navigation.

I have always been promptly on hands with sufficient force to make necessary repairs.

Do the mills on your division interfere with navigation, by improper use of water.

In times past they have; but since the abandonment of some mills, I have heard no complaint.

Is there any improper leaks or waste in the locks or lock gates.

There is none, more than ordinary leakage, after a year's wear, the levels being well equalized.

THOS. ST. LEGER.

ANDREW SAYLOR, of the town of Carrol, in the county of Fairfield, in the State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of the State.

Have been acquainted with the Ohio canal ever since the year 1831, and the Hocking canal ever since it was built, in the year 1836.

What is your business.

I have been buying and shipping grain for myself and other parties ever since the year 1846, in the town of Carrol.

What is the comparative difference between the canals at this time and when they were first leased.

There is not much difference, excepting the Lancaster side cut, which, I think, is improved from what it was then, when there is a supply of water.

Was you acquainted with Lancaster side-cut when first built; if so, how was it constructed by.

I was acquainted with it, and it was constructed by the Lancaster Lateral Canal Company, and the dimensions were much smaller than the balance of the canals, so much so that passing places had to be made to pass boats. When the State took possession of the Lancaster side-cut, it widened and deepened the summit level, and removed the two locks then on it. Subsequently, by contract with Miller, Doyle & Co., a large portion was deepened and widened, and the work since done by the Lessees in dredging out and deepening it, has made it equally as good as other portions of the canal, when there is a sufficient supply of water.

What is the annual amount of your business, when there is a good canal to ship on, and other parties in this vicinity.

From eighty to one hundred thousand bushels of grain.

How long was navigation suspended on the Lancaster side cut during the last year.

About three or four months.

What was the cause of this suspension—was it by any neglect of the Lessees.

I don't think it was. I think it was caused by the extreme drouth of the last two seasons, producing a total failure of the Licking reservoir, and other feeders, to furnish a supply of water.

ANDREW SAYLOR.

FRANK MYERS, of Carrol, in the county of Fairfield, in the State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of the State.

Have been acquainted with Ohio canal, from Portsmouth to Cleveland, and Hocking canal, from Athens to Carrol, for the last sixteen years.

What has been your business on the canal.

I am a boatman.

What is the comparative condition of the canal now with when first leased.

I think the canal is in as good condition as when first leased, and the Lancaster side-cut has been improved by dredging and by stake-piling the sides of the canal, and making the channel deeper and permitting boats to pass at numerous points, which, heretofore, they could not do.

Are the locks, dams, culverts and aqueducts, as far as you know, in as good condition as when first leased.

I think the average condition is as good, excepting the wear and tear.

Is there any improper waste or leakage through the locks or gates.

I think there is none.

Have you any difficulty navigating with boats drawing three feet of water, at ordinary height.

I have no difficulty when the canal is at fair stage of water.

How much freight do boats generally carry on three feet of water.

From fifty-five to sixty tons.

How long was navigation suspended on Lancaster side-cut during the last year.

About four or five months.

Has this want of supply of water been caused by any neglect of the Lessees.

I think there has been no neglect on the part of the Lessees. It was caused by want of rain to fill the reservoirs and other feeders.

Have the Lessees always promptly repaired all breaches so as to prevent any unnecessary delay.

They have always done the work promptly.

FRANK MYERS.

WM. COFFMAN, of the town of Carroll, in the county of Fairfield, in the State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of this State.

Have been acquainted with the Hocking canal and Ohio canal, from Chillicothe to Cleveland, for eighteen years.

What is now and has been your business.

I am now boating and have been for the last eighteen years; mainly on Hocking and sometimes on Ohio canal.

Is the condition of the canals as good now as when first leased to the present company of Lessees.

The Hocking canal and Ohio from Carroll to Columbus, are as good as when first leased; the Lancaster side-cut is much improved.

In what manner has the Lancaster side-cut been improved.

It has been improved by dredging out the bottom and making it deeper, so that two loaded boats can pass at many places where heretofore they could not pass.

What is the condition of the locks, dams, culverts and aqueducts, on the portion of the canal you have been boating on.

The locks are in good condition; those at Lockville, are better than I ever knew them before, there being no improper leakage or waste of water; the dams are in good condition, being very tight, or otherwise, could not have had the navigation we did, on account of the extreme drouth; in regard to culverts, I have heard no complaints. I have heard no complaints about aqueducts, except at Roscoe, which has since been rebuilt.

Within your knowledge, have the Lessees rebuilt or repaired any of the permanent structures.

They rebuilt one new lock at Lockville, and another, excepting the stone work above the recesses; the most of the stone work at the lower Winchester lock, has been rebuilt; they put in a large number of lock gates at different points; and rebuilt a large culvert at Rager's run, which was substituted in place of an aqueduct; they made considerable repairs on Columbus, Lockville and Sugar Grove dams; made no repairs on aqueducts that I know of, excepting Roscoe aqueduct, before mentioned.

Can boats navigate the Hocking canal and that part of the Ohio canal that you have been boating on, successfully, drawing three feet of water.

There is no difficulty in navigating with boats drawing three feet of water at ordinary height, and have, when the canal has been at top water line, come out of the Lancaster side-cut, drawing three feet and four inches of water.

What is the tonnage of boats on Hocking and Ohio canals.

Sixty tons when canal is at top water line, and fifty tons on short water. How long was navigation suspended through the Lancaster side-cut, for want of supply of water, during the last year.

From about the first of August, up to the last of January.

Was this want of supply of water on Ohio and Hocking canal, caused by neglect of the Lessees in keeping them in proper condition for navigation.

There has been no neglect on the part of the Lessees, the want of supply has been on account of the extreme drouth, causing a total failure of the Licking Summit reservoir, and other feeders.

WILLIAM COFFMAN.

MATHEW STUART, of the town of Carrol, in the county of Fairfield, in the State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Public Works of the State.

Have been acquainted with the Hocking and Ohio canals for about fifteen years.

What is your present occupation.

I am at this time boating, and have been for about fifteen years.

What is the condition of the canal now compared to what it was when first leased to the present lessees.

The Hocking canal is as good, and the Lancaster side-cut is better. The Ohio canal is about the same, with the exception of the Seven Mile level, on the Columbus side-cut, where navigation has probably been interrupted by grass.

Have the lessees shown due diligence in removing grass from the canal.

They cut grass every season and remove it.

Are you acquainted with the locks and dams, culverts and aqueducts, on the portions of the canal you have been on, if so, what are their present condition.

The locks, some of them, are not quite so good, while others are better; but the average condition is about equal to when leased. I don't know much about the dams, but think they are as tight as could be made. I have frequently seen them working on them as I passed along on my boat. I don't know the condition of culverts, but have heard no complaints; am not acquainted with any aqueduct, excepting one on the Hocking canal, which is in good condition.

Within your knowledge, have the lessees rebuilt or repaired any of the permanent structures.

They rebuilt one-half of a lock at Winchester, and rebuilt one new lock at Lockville, and put in several new gates at different places; don't know of them rebuilding any dams, culverts or aqueducts.

Can boats navigate the Hocking canal, and that portion of the Ohio canal, that you are acquainted with, drawing three feet of water.

Boats can navigate the canal drawing three of water, if the levels are full.

Has there been any difficulty of navigation from the want of supply of water to keep the levels full, and has the want of supply been owing to any neglect on the part of the lessees.

There has been no neglect on the part of the lessees; but the scarcity

of water was caused by extreme drouth; the Licking Summit reservoir and other feeders totally failing to supply.

What is the tonnage of boats on the Hocking and Ohio canals.

On good water, from sixty to sixty-five tons, and on short water, from forty-five to fifty tons.

How long was navigation suspended on the Lancaster side-cut during the last year.

From the last of July to about the 15th of January.

M. STUART.

A. BOWER, after having been duly sworn, and heard the statement of M. Stuart, adds the following endorsement:

I having heard the above testimony of M. Stuart read, fully endorse the same, with the following exceptions: That on the Columbus side-cut, at Four-mile level, the grass is very bad in grass seasons, and has not been taken out as well as it should have been; that the Starch Factory runs in a large amount of deposit, which should be removed and the nuisance abated.

A. BOWER.

ZANESVILLE, O., March 19th, 1872.

J. J. BARR, of the city of Zanesville, and county of Muskingum, and State of Ohio, of lawful age, being first sworn, deposes and says:

How long have you been acquainted with the Muskingum Improvement of this State.

I have been acquainted with the Muskingum Improvement for twenty years.

What is your present business.

I am now captain of the steamer J. H. Best, and have been steamboating on this improvement more or less for the last eight years.

What is the condition of this Improvement now compared with when you first came on it.

The general condition is better than when I first came on the Improvement.

In what manner has it been improved.

It has been by the repairing and rebuilding of dams, locks, cribs, and removing of bars and dredging the canals.

At what points have they made these repairs.

The Rokeby dam has been repaired and partly rebuilt; there has been repairs put on the Windsor lock and dam, and also on Lake chute dam, and there has been new cribs built at the Lake chute dam, and part of Beverly dam has been made new and the old part repaired, and Beverly lock rebuilt; the Lowell dam has been rebuilt and Devol's dam repaired, and the Marietta dam has been mostly rebuilt, and the lock repaired; all the canal have been well dredged; the channel at Lake chute has been cleaned out, all of which was rock bottom.

Have the lessees, or their employes, used at all times due diligence to repair and rebuild all necessary structures and breaches, and clean out all bars for the maintenance of navigation.

They have at all times performed their duty in every respect, and navigation could have successfully been made at all times had not the drouth prevented for want of a sufficient supply of water, and with all the low

water, we navigated a two hundred ton boat at a time when the river was lower than I ever knew it before.

Do the mills located on the Improvement interfere with navigation.

They do in time of low water, interrupt navigation; they are not gauged, and have full sway at the water.

J. J. BARR.

McCONNELLSVILLE, O., March 19, 1872.

WM. DAVIS, of the town of McConnellsville, and the county of Morgan, and State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Muskingum Improvement.

I have been acquainted with it ever since it has been built.

What is your present business.

I am captain of the steamer Mink, and have been engaged in steamboating for the last thirty-five years.

What is the condition of this Improvement now compared with when first leased.

There is not any material difference in it; about in the same condition as when leased to the present company, for navigation; but the structures are in better condition.

Have the company repaired or rebuilt any of the locks, dams, or dredged out the canals and bars, so as to maintain good navigation.

They have repaired several of the locks, and rebuilt portions of some of them, and renewed all the gates but one pair; have done a large amount of repairs on the dams, and rebuilt portions of some of them. They have dredged out most of the canal. There is no trouble in navigation when the water is at the top of the dams, and we do not have as much difficulty in navigation as formerly; all the work they have done has been of a very permanent kind.

Is navigation interrupted by the use of water at the mills.

Yes; when there is a scarcity of water, the pool is drawn down so as to interfere with navigation.

Have the Lessees, or their employes used, at all times, proper diligence to make all the necessary repairs.

They have at all times promptly done everything that was needed to provide for navigation.

WM. DAVIS.

SOL. C. BECKWITH, of the town of Malta, and county of Morgan, and State of Ohio, of lawful age, being first duly sworn, says:

Having heard the statement of Wm. Davis read, I fully indorse the same.

S. C. BECKWITH.

ZANESVILLE, O., March 19, 1872.

A. P. STULTS, of the city of Zanesville, and county of Muskingum, and State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Muskingum Improvement.

I have known the Muskingum Improvement since the year 1845, and was steamboating on it from 1860 to 1862, and since 1865, have been a forwarding and commission merchant and steamboat agent.

How is the Improvement now compared with when first leased.

I think it is in much better condition than it was in the year 1861, when first leased.

In what way has it been improved.

At Beverly, the lock was mostly rebuilt, and pile dam entirely rebuilt; at McConnelsville, expensive repairs on dam and crib, and at Rokeby; also heavy repairs on dam and crib, at Zanesville, considerable repairs to dam of very permanent character; and the canal its full length has been dredged, and thoroughly cleaned at the head, below the original bottom, by blasting out rock.

Have the Lessees, or their employes always used due diligence to make all the necessary repairs to maintain good navigation.

Yes; they have performed their duty in keeping up all repairs for navigation, when there has been sufficient water. The interruption for the past two years has been owing to the drouth.

Have the mills caused any interruption of navigation.

They do in low water in the canal at this place.

A. P. STULTS.

MARIETTA, O., March 21, 1872.

A. S. CURTIS, of the town of Harmar, and county of Washington, and State of Ohio, being duly sworn, deposes and says:

How long have you been acquainted with the Muskingum Improvement.

For twenty years—intimately for the last seven years—having business on the river at this point.

What is your present business.

Milling, and getting power from the level.

How does the present condition compare with when first leased.

I think the dam more secure, and much more compact backing, not leaking but little water.

Have the Lessees, or their employes always repaired the works promptly, so as to give good navigation when there was sufficient supply of water.

Having occasion to use the lock to get timber above the dam, have been personally interested in the dam being kept in good repair. I know proper vigilance has been exercised in detecting broken plank, or holes in the backing. All necessary to keep the dam or lock in good repair has been done soon as the water or weather would admit. The only obstruction on this level has been when repairing the chamber of the lock.

A. S. CURTIS.

ZANESVILLE, O., March 19, 1872.

EDWARD BALL, of the city of Zanesville, and county of Muskingum, and State of Ohio, of lawful age, first being duly sworn, deposes and says:

How long have you been acquainted with the Muskingum Improvement.

Since they were leased in 1861, until the end of 1867, I was very familiar with them, being most of that time superintendent in charge of the work. I had known them from McConnellsville to Dresden ever since their original construction, but know but little about the lower end of the river, never having been over it prior to the summer of 1852, so far as I now remember.

What is the present condition of this Improvement, compared with what it was when leased.

It has been improved, until I consider the structures worth one hundred and fifty thousand dollars more than when they came into the hands of the Lessees.

What permanent structures have they repaired or rebuilt; or what improvement of any description have they made.

When they took charge of the work, it had been in operation about twenty-five years, and consequently, all the timber and much of the stone work had greatly deteriorated, and very soon began to give way, and had to be replaced with new and better materials. When I left the river in 1867, every lock and gate on the Improvement, had been rebuilt, excepting one pair at Symes Creek, one pair at McConnellsville, one pair at Luke Chute, and one pair at Marietta. There are in all 27 pairs, including guard gates, so that 23 pairs had then been rebuilt, costing about \$23,000. The lock wall at Marietta, also gave way, from the action of a leak under the lock. It was repaired at an expense of about \$3,300. At the same place, the dam sunk once, and had to be raised higher on top. There were also several partial breaks, and in 1866 and 1867, a very serious break, the reconstruction of which cost about \$40,000, which added to prior repairs, would run the cost of repairs at Marietta alone to about \$55,000. At Devol's dam, five miles north of Marietta, two or three breaks occurred, both in the dam and the cribbing, but these were repaired probably for six or eight thousand dollars. At Lowell, seven miles further north, the damage has been far more serious and expensive. Several breaches had occurred previous to 1867, but in the spring of that year, it was more or less damaged, almost from end to end. This last repair alone cost nearly \$40,000. In all, the Lessees have expended at this point at least fifty-five thousand dollars, and it may be even greater in amount. At Beverly, the next point coming north, a large amount of money has been expended in repairs and reconstructions. There were at least three serious breaches in the dam, and a serious and expensive breach in the lock walls, about fifty feet tumbling in on both sides. The conduit for the supply of the mills, also gave out, and had to be partially reconstructed. The cost of the various repairs at this point would amount to \$45,000, or perhaps \$50,000. The next point is Luke Chute. The damage here has not been so great, but still very considerable. The dam sank in the quicksand and had to be raised on top, and a long and expensive apron built on piles constructed to prevent the reaction of the water. The wing dam also had to be repaired. At Windsor, a very

serious breach in the dam occurred very shortly after the Lessees took charge of the Improvement. The cribbing has also required rebuilding on both sides of the river. There has also been considerable expenditures to prevent the undermining of the inside lock wall. The gate at the head of the conduit, has also been rebuilt. The expenditures here would reach twenty-five or thirty thousand dollars. McConnellsville comes next in rotation, and here there has been several breaches in the dam, and also in the inside lock wall and the cribbing. The expenditures at this point, have been very considerable; I cannot state the precise amount, but I feel safe in saying that it will range between thirty and fifty thousand dollars. At Rokeby, the expenditures have been heavy, in rebuilding cribs and repairing breaches in the dam. The expenditures here must have amounted in all to twenty or thirty thousand dollars, perhaps a larger sum would be required to cover them. Taylor's is the next point. There has been several breaches here in the dam, but with one exception, not so serious as at other points. I am not prepared to say what they cost. In the spring of 1867, a very serious breach occurred in the dam at Zanesville. It occurred in the middle of the river, and was 217 feet in length and 22 feet in depth. It had to be coffered with a dam 450 feet long at the upper side. The cost of these repairs were a little over \$22,000, including the cleaning out of sunken boats, drift and bars, which had accumulated in the river at the head of the canal, as to seriously interrupt navigation at low water, as well as to render the supply of water for the mills and manufactories very deficient. During the same season, there was a serious break in the dam at Symes' creek, and subsequently, the lock was badly damaged by being undermined by the water; both have been repaired at a heavy expense. In addition to these expenditures on permanent structures, very large sums have been paid for dredging at Marietta, between the outlet lock and the Ohio river; at the head of the lock at Devol's dam; in the canal at Lowell; in the canal at Beverly; on the bar below the lock at Luke Chute; in the canal, and at the bar in the river near the head of the canal at McConnellsville; on the bar below the locks at Rokeby; in the canal at Taylorsville; in the canal and above the canal at Zanesville; on the bar below the locks at Symes' creek; and at the bar below the outlet lock of the Ohio canal at Dresden. The work about which I have spoken, was all or nearly all done prior to 1868, since which time, I have had but little to do with the river, and know but little about the expenditures for its improvement.

Are the mills on the Muskingum Improvement properly gauged.

They are not gauged, and are generally using a much greater amount of water than their leases entitled them to use, or at least such was the fact when I was on the river.

EDWARD BALL.

LOWELL, O., March 20, 1872.

EDWARD SPRAGUE, of the town of Lowell, and county of Washington, and State of Ohio, of lawful age, being first duly sworn, deposes and says:

How long have you been acquainted with the Muskingum Improvement.

I have been acquainted with it ever since it was first built.

What is your business at present.

I am at present Superintendent of the Muskingum Improvement, and have been in that position more or less for twenty-seven years.

What is the present condition of works on the Improvement, compared with when first leased to the present company.

I think their condition is much better. I have never known them to be in as substantial condition as they are at this present time.

In what manner have they been improved.

They have been improved in the rebuilding of locks, dams, in dredging canals, and removing bars. At Marietta the lock has had considerable work done upon it. There has been about one-half the dam rebuilt, and extensive repairs put on the other half, a large amount of cribbing built and piles in connection with the dam and lock. At Devol's, the lock has been repaired by renewing mitre sills, and replanking the floor of the lock in the chamber, and replacing new gates. The dam has been repaired by new sheeting, and filling with stone and gravel. At Lowell, the lock has been repaired by driving sheet piling at the mouth of the lock, floor replanked, mitre sills lined and bolted, and there has been six hundred and forty feet of the dam rebuilt; the balance has been largely repaired, and a great amount of stone and gravel put in as backing. The canal has been mostly dredged out, so that there is no difficulty in navigation. There has been two new pair of gates put in; at east end of dam, a heavy protection wall was built. At Beverly, the lower half of the lock has been entirely rebuilt, and the crib at foot of lock on the east side has been rebuilt. One full set of new lock gates have been put in, and one set of guard gates. A new pile dam, two hundred feet in length, has been rebuilt at east end, and the dam has been extensively repaired, and a new cribbing at west end of the dam; and in connection, piling driven, filled in with heavy blocks of stone. The dam has been backed with stone and gravel; the abutment to the dam was protected with timber, and at the mouth of the lock the bar was dredged out. Luke Chute, at the lock there has been one set of new gates put in; the dam has been repaired with new aprons, some new cribbing and sheeting, and cribs filled with stone; protection piling put in below dam, and also block stone. The cribbing at the west end of dam was extensively repaired, and heavy bar removed at mouth of lock by being dredged out, and a wing dam built across a chute on the west side about three hundred feet in length. The dam has had a large amount of backing of stone and gravel, and new cribbing at the head of the lock. At Windsor, there has been one full set of new gates put in, and the walls have been bolted together and thoroughly filled with grouting of best quality of hydraulic cement, and mitre sills have been refitted and well bolted down. Two hundred and twenty-five feet of new dam has been rebuilt, and the balance of it has been repaired extensively; some new cribbing at east end of dam, and dam has been well backed with stone and gravel, and cribbing at west end. McConnellsville: at the lock one full set of new gates, also one set of guard gates. The walls of the lock have been well bolted and thoroughly grouted with a good quality of hydraulic cement. The mitre sills have been refitted and bolted down, and at this point there has been about three hundred feet of new dam built; the balance has had considerable repairs on it. The heavy cribbing at east end has been timbered up and bolted, and the canal has been dredged out. At Rokeby, the lock has had one full set of new gates. The mitre sills have been refitted with new timbers at foot of the lock, and heavy protection piles driven below the

lock. There has been about two hundred feet of new dam rebuilt, and one entire new timber abutment built at west end of dam from foundation. The balance of the dam received a large amount of repairs. At Taylorsville, the lock received an entire new set of gates, repairs were made to the dam by placing in new timbers, and piled and sheeted. The canal has been dredged out its entire length, and crib work across the mouth of brewery run, to prevent bars making in the canal. One set of new guard gates has been put in. At foot of lock the wall has been bolted, and two new cribs built at same point, one on each side. At Zanesville, the lock has had three pair of new gates; the canal has been bottomed out several times, but will require some more attention, this season. There has been large cast iron tubes put in the arch which passes under the canal at head of lock, for the purpose of cleaning canal and removing deposits from Slago run. There has been about one hundred and fifty feet of new dam rebuilt; the balance of the dam receiving more or less repairs. At Symmes' Creek, the lock has received very extensive repairs; one full set of new gates, and a new bottom of timber; the walls were bolted and a casing put on and grouted, and new crib forming the breast work at the head of the lock, together with new miter sills. There has been repairs made to the dam, in putting on new timbers, sheeting, and filling with stone. The crib at west of dam has been mostly rebuilt, and the chutes below have been dredged out. At Dresden, the bar at the mouth of the Ohio canal has been dredged out.

Do the mills interrupt navigation.

Yes, sir, they do, when there is a scarcity of water, and there should be some regulation in regard to the matter.

E. W. SPRAGUE.

A. WEBSTER, of Devol's Dam, and county of Washington, State of Ohio, of lawful age, being first duly sworn, says:

Having heard the statement of Edward Sprague read. I fully endorse the same.

A. WEBSTER.

COLUMBUS, O. March 26, 1872.

WILLIAM J. JACKSON, of lawful age being first duly sworn deposes and says:

QUESTIONS BY JOHN B. GREGORY.

Where do you reside. What is your occupation.

I reside in Piqua, Miami county, Ohio, and I am a civil engineer by profession, and have been engaged in the business of civil engineering for over thirty years.

Are you acquainted with the Public Works of Ohio.

I am, and have been for thirty years and more, having been engaged as an engineer during the construction of most of the Miami and Erie canal, and having had charge of the same as resident or principal engineer for the State of Ohio after the same was completed and in operation, during portions of the time previous to the lease. I was one of the original Lessees, and continued so till a year ago last December, (Dec. 1870) and

during a portion of that time, had charge of a portion of the Miami and Erie canal as local superintendent under the Lessees; and for four years previous to the first of last November (November 1, 1871), was the General Superintendent of all the Public Works, under said Lessees; but since that time have had no connection with them.

What is the condition of the Public Works now, as compared with their condition on the first of June, 1861.

The condition of the Public Works is much better now than it was at the date of the lease, June 1, 1861.

State in what particular and to what extent they are in better condition.

When the Public Works were leased, the Miami & Erie canal, from the summit to Cincinnati, was so filled up that boats had great difficulty in getting through with full loads, and, in many portions, two loaded boats could not pass each other. Since that time the canal has been widened and deepened, so that boats drawing three feet and more have now no difficulty in navigating freely, and loaded boats can pass each other at all proper places, without trouble or detention. Boats that formerly carried sixty tons or less can now carry from seventy to seventy-five tons. The towing path and banks are in better condition than when leased. The structures are in much better condition. The aqueducts across Mill creek, at Carthage and Lockland, and those over Gregory's creek, Dick's creek, Mad river, the Laramie at Lockport and Berlin, the St. Mary's river, Plum creek, Six Mile creek, Jennings' creek, Little Auglaize river, Blue creek, Big Flat Rock creek, and other smaller ones, have been rebuilt in a permanent manner. Of the forty-one wooden locks, between the Laramie summit and Defiance, and between Junction and the Indiana State line, thirty-five have been rebuilt new; and of the stone locks, between Cincinnati and Toledo, twelve have been rebuilt, and a great number of the balance more or less rebuilt and grouted, the mitre-sills replaced with new ones, or thoroughly repaired, the floors have been nearly all renewed, and I believe every lockgate on the whole canal has been replaced by new ones. The change bridges and tow-path bridges, including the Maumee river bridge at Defiance, have all, or nearly all, been rebuilt. The dams have been repaired, and some of them lengthened, and their abutments repaired. The feeders have been cleaned out, the reservoir banks made stronger, and at the west bank of the Mercer county reservoir a wharf of timber, over 8,000 feet long, to protect the bank from action of the waves, costing \$14,368, of which the Lessees paid one-half, has been built, and at the east bank a large portion of the same was protected. At the Laramie reservoir, a new and permanent waste weir has been built. At the Lewistown reservoir an extensive breach was repaired, and that reservoir brought into use by the Lessees, the same being empty at the time of the lease. On the Ohio canal, when leased, the prism had become so much filled up with deposit that loaded boats navigated with difficulty and delay, when drawing three feet of water, and in many places loaded boats could not pass each other. To partially remedy this difficulty the State had prepared passing places, at some points, so that one loaded boat could stop and draw out of the way while another passed. This has been almost entirely remedied on the north end of the canal, and from Roscoe to Portsmouth very greatly improved. The navigation of the canal is much easier and safer, and boats can now carry, in ordinary stages of water, from ten to twelve tons more freight, between Roscoe and Cleveland, than they carried in 1861, and navigate success-

fully; and from Roscoe to Portsmouth, from five to eight tons more. The banks have been improved and strengthened, and along the valleys of the Scioto, the Walnut creek, the Licking creek, and the Muskingum, Tuscarawas and Cuyahoga rivers, a very large amount of stone protection has been placed on the outslopes of the banks, and piling driven to protect them from abrasion by the streams. The structures are in much better condition now than in 1861. The aqueducts over Mill creek, Tinker's creek, Furnace run, the Tuscarawas river at Bolivar (from the Sandy and Beaver), the one near Orange, the Walhonding at Roscoe, the Wapatomaka at Dresden, the one over the same creek south of Frazeesburg, together with the abutments of the same, the two over the North and Raccoon forks of Licking at Newark, the two between Hebron and the Licking Summit reservoir, one over the Columbus feeder, and one at Sunfish creek, the latter with one entire new span, have all been rebuilt, and at Waverly, the culvert which was too small has been replaced by a new aqueduct, and new trunks have been put in at Circleville, Yellow Bud, Paint creek and Brush creek aqueducts. There has been some eight stone locks rebuilt, several others half rebuilt, where the State had rebuilt one-half previous to the lease, and a great many others have been partially taken up, relaid and grouted, the floors replanked, mitre-sills renewed or repaired, and the gates almost entirely renewed from one end of the canal to the other. I regard the general condition of the locks on the Ohio canal as much better than they were in 1861. The change and tow-path bridges and waste-gates, on the entire canal, have, with but few exceptions, been rebuilt. When the canals were leased, Tomlinson's dam, over the Scioto, below Chillicothe, was at least one half destroyed, and useless as a feeder to the canal. That portion was substantially re-built, and the remainder has been thoroughly overhauled and repaired, making it a better structure than it ever was before. One-half of the dam across the Scioto, below Circleville, was entirely rebuilt of new materials, and the balance thoroughly repaired. The dams across Big and Little Walnut creeks have been replanked, refilled and repaired. The dam across the Scioto at Columbus has been repaired with new timber, a new abutment built at the west end, and an extensive protection wall put in at the east end in rear of the abutment. The stone dam across Little Walnut, above Winchester, has had a new course of coping put on the breast, and securely battened and clamped with iron. The dam over the same creek, near Basil, has been repaired, as have also the dams across the South, North and Raccoon forks of Licking. The Black Hand dam, across Licking, has been almost entirely rebuilt with new material, and is now a better structure than it was when originally built. The dams across the Tuscarawas and Cuyahoga have all been overhauled and repaired. A portion of the dam over Sandy, below Sandyville, was rebuilt by the State in 1860, and the residue, being more than one-half, has been rebuilt by the Lessees, and that portion built by the State overhauled; and the lock in connection with the dam has been rebuilt by the Lessees. The repairs of the dam below Chillicothe, the one below Circleville, the one at Black Hand, and the one at Sandyville, were all very expensive jobs, and the style of the work was more of the character of original construction than of repair; and the condition of the dams on this canal is very much better than it was at the time of the lease. The condition of the reservoirs to hold water is excellent. The Lessees have placed a large amount of stone protection on the banks of the Licking Summit reservoir, to prevent abrasion and waste during high winds,

when the reservoir is full. The feeders to the Licking and Portage Summit reservoirs are in good condition for carrying water, when there is any in the streams. On the Hocking canal, at the date of the lease, the locks were in good condition, with the exception that many of the gates were old and needed renewal. The repairs, from time to time, upon the locks, and the renewal of the gates, floors and mitre-sills of the same, leave them now in a better condition than in 1861. The prism of the canal was, in 1861, in bad condition. The Lancaster side-cut was so that loaded boats could not navigate it. In the necks, at the head of the slackwater pools, and also below the locks in the pools, there was such an accumulation of mud that boats with ordinary loads were compelled to block over, and were subject to great annoyance and delay. These impediments have been removed, and now, when there is an ordinary supply of water, boats have no difficulty in navigating the canal. The dams are in better condition than in 1861, as are also the banks of the canal. The Walthonding canal is but little used. It has never yielded a revenue to meet the cost of its repair. It is now, in all respects, as to its locks and dams, in as good, if not better, condition than it was at the date of the lease. The prism of the canal and its banks are better now than then, and boats drawing three feet of water have no difficulty in navigating it. The Lessees have expended, annually, upon its repair, a large sum of money in excess of its receipts, and have made one valuable and expensive improvement below the six mile dam, to facilitate the washing out of mud that accumulates in the neck of the canal above the guard lock. On the Muskingum Improvement, most of the dams, and the Symmes creek, McConnellsville, Beverly and Hamer locks were in bad condition in 1861. The dams were, from year to year, repaired extensively, and those locks had a great deal of work done on them. In 1866, the dam at Marietta gave way, and about one-half of it was carried away bodily. In 1867, the great ice gorge in the river carried away about one-half of the dam at Zanesville, about one-half of the dam at McConnellsville, and some six hundred and forty feet of the dam at Lowell. Other dams were injured, but not to the same extent. In the fall of 1866 a portion of the lock at Beverly fell down. The broken portion of this lock was rebuilt in 1867, and all the dams rebuilt and repaired at an enormous expense, the work being all heavy and costly. In the winter of 1870; a portion of the dam at Rokeby was destroyed, and the same was rebuilt, and the portion remaining overhauled. The dams on this river are now much superior and more valuable than in 1861. The locks at Symmes' creek, McConnellsville, Beverly, Windsor and Devo's have had extensive repairs. The other locks have also had proper attention. The lock at Harmar is now, as it was at the date of the lease, in a critical condition, though the Lessees have, at several different times, done much repairing upon it. The lock at Taylorsville shows unmistakable signs of decay, the face of the stone annually scaling off. All the locks on the river, with the exception of the two last named, are in better condition than in 1861; and I believe every lock gate and guard gate on the river has been renewed but one pair. The canals have been improved by dredging, and bars in the pools of the dams removed in the same way, and the Improvement is in much better condition for navigation than at the date of the lease.

Do the mills affect the navigation of the Public Works, and if so, why.

They do, and it is because no proper gauges have been put in, and I think they will continue to do so in seasons of scarcity of water until proper gauges are inserted, which, under the terms of the water leases,

the lessees of water power are bound to do, and in case of failure on their part the State should have it done.

Can boats drawing three feet of water successfully navigate the several Public Works of Ohio.

They can, except in seasons of scarcity of water produced by drouth, or when obstructed by ice, or some unavoidable casualty.

Have the lessees at all times shown due diligence in making repairs, mending breaks, and removing obstructions to navigation.

They have. In my opinion no set of men could possibly have shown a greater degree of zeal in the performance of their contract obligations.

Was the supply of water for navigation in the seasons of 1870 and 1871 deficient, and if so, what was the cause.

The supply of water during both of those seasons was very deficient, and the cause was lack of the usual amount of rain. I have observed the condition of water supply very closely during this time, and can state that we have not had a rain that amounted to enough to raise the streams in Ohio to half flood height, since the 4th day of April, 1870, in the western portion of the State, and the 1st of March, 1870, in the eastern portion. At the close of the season of 1870, the reservoirs were drawn down very low, and the want of rain during the winter of 1870 and 1871, failed to fill them, and hence at the commencement of the season of navigation in 1871, there was a very short supply of water in all the reservoirs. There was little or no rain during the summer of 1871, and during the whole of that time there was a scarcity of the supply of water both from the reservoirs and from the living streams used as feeders.

Was due diligence used by the employees of the lessees in husbanding what water there was and in preventing waste.

There was due diligence used, and I believe that no extravagant use or waste of water was permitted at any point on the Public Works. The fact that navigation was maintained on the canals to the extent it was, is the highest evidence that every exertion was used that could be, to economize the supply of water and make it available to the greatest possible extent.

State the condition of the Public Works during the time they have been held by the Lessees, as compared with the condition of the same while under the charge of the State.

I think the condition of the Public Works has been much better during the lease than for four or five years previous, because the management of repairs on them, under the lease, has been more efficient, thorough and extensive. In 1855 the State attempted to provide for keeping the Public Works in repair by the contract system, which was a change from the mode in operation previous to that time, but after the trial of the contracts for one season, so much dissatisfaction with them was developed, as to induce the legislature to return to the old plan. During the legislation and litigation consequent upon this change, the repairs were very much neglected, the revenues of the Public Works were greatly diminished, and the legislature having failed to make sufficient appropriations to meet the demand for necessary repairs, the condition of the Works became dilapidated, and continued to grow worse till they were taken charge of by the lessees. From 1856 to 1861, the revenues were every year insufficient for the repairs, and the legislature was always tardy in appropriating the money required by the Board of Public Works for that purpose, and consequently the Works continued to run down.

W. J. JACKSON.

COLUMBUS, March 29, 1872.

THOMAS MILLER, of the city of Columbus, of lawful age, being first duly sworn, deposes and says, as follows:

State your age, place of residence, and occupation.

I am about 55 years old, reside in Columbus, am now a farmer, and formerly largely engaged as a contractor on various Public Works in the State.

How long and how intimately have you been acquainted with the Public Works of the State.

I have had a general acquaintance with portions of the Public Works of the State ever since their commencement—directly and intimately with the Ohio canal, from Roscoe to Portsmouth, ever since it was commenced; also, with that part of the Hocking canal known as the Lancaster side-cut, and the Walhonding canal, since their construction. I aided in the construction of the Ohio canal between Newark and Dresden. I was Superintendent of the National Road for four years, commencing in 1850. Then I was one of the contractors in the firm of Doyle & Miller, to whom was let the repairs by the State of the Middle Division of the Ohio canal, embracing that canal from Roscoe to Lockville, commencing November 15, 1855, and was so employed for nearly two years, during which time I also had a contract, with Doyle and others, for widening and deepening the Lancaster side-cut. I was General Superintendent of the Lessees during the first five (5) years of their lease on the Ohio canal, from Roscoe to Lockbourne, Walhonding canal, Dresden side-cut, Licking Summit reservoir, and all the feeders of said canal and reservoirs on said division, and have had a general knowledge of said division ever since, also of the Ohio canal from Columbus to Portsmouth.

State in what condition the Lessees have kept and maintained that portion of the Public Works with which you have been acquainted, as compared with their condition at the time of the execution of the lease of the same.

I consider them to have been kept and maintained by the Lessees in a very much better condition than at the time of making the lease. At the date of making the lease, the Higby guard lock, below Chillicothe, was nearly ready to fall down, which has been rebuilt since. About one-half of the Tomlinson dam, over the Scioto, was destroyed in February, 1861, and thereby the feed for that part of the canal was cut off from thence to Portsmouth, at the date of the lease. This was immediately thereafter rebuilt, and the balance repaired by the Lessees on taking possession of the canals. The Circleville dam was in a very dilapidated condition on June 1, 1861, and during that summer had considerable repairs, but owing to its dilapidated condition was mostly destroyed in the spring of 1862; this was substantially rebuilt in 1862. The aqueduct there was also in bad condition, June 1, 1861; a new trunk has been put in. The lower half of the guard lock at Lockbourne was also really unsafe at date of lease; this was promptly and substantially rebuilt by the Lessees. The dams at Millport, over Little Walnut, and at Lockbourne, over Big Walnut, were in bad condition at date of lease, and these required immediate attention; they were promptly overhauled and repaired by Lessees. The west abutment of the dam over the Scioto, at Columbus, was cracked and crumbling down at the date of the lease, and was removed and an entire new and permanent structure was put in its place, from Hocking

Valley stone, by Lessees. The dams on Little Walnut, near Lockville and Basil, with the feeder at Basil, were in a very bad condition—the feeder was literally filled up; which dams were repaired and feeders thoroughly bottomed out by Lessees. The Chaney feeder was entirely filled up and the dam destroyed at date of lease; these were restored by Lessees. At the date of the lease the Licking Summit feeder was in a miserable condition, and the dam at the head of the feeder, at Kirkersville, was destroyed; dam was rebuilt, head gates renewed, and much work was done in bottoming out the feeder and in strengthening the banks, but the feeder, though much improved by Lessees, has never had the capacity it should have. The dams at the head of Granville feeder, over the Raccoon fork, and over the North fork, near Newark, at the Black Hand over the main Licking, and the three (3) dams on the Walhonding, were also in a bad condition, and had to be largely repaired to enable the Lessees to navigate the canals at the date of the lease. At the Black Hand, a very expensive and permanent structure has been built by the Lessees, as also have the dams on the North and South forks. I rebuilt the aqueducts for Lessees at Tomica, near Frazey'sburgh, over Raccoon at Newark, the two between Hebron and the reservoir, and the Lessees, since the expiration of my time, have rebuilt the aqueducts over the Tomica, at Dresden, and over North fork, at Newark. They have repaired many culverts, that were out of repair at the date of lease, on my division. I also built for Lessees an entire new lock at Lockville; also rebuilt one entire side and the jams of the other side of another lock at same place. They have since built, near Chaney's Woolen Mills, one lock, and half of a lock near Rodenfell's Mill; about two-thirds of the White Mill lock, below Newark; one-half of the lock at Taylor's, being one whole side; nearly one-half of the outlet lock into the pool of the Black Hand dam, and more or less repairs were made on all the locks on my division; and they put all the locks and other structures in good condition for successful navigation, and in a better condition than when they came into the hands of the Lessees. The bed and banks of the canal have been very much improved, and kept and maintained by the Lessees in a better condition than at the date of the lease, and afford much better facilities for navigation than at date of lease.

State whether the Lessees, at all times since the execution of said lease, when the season permitted and the water was not necessarily drawn out of the canals constituting part of the Public Works, for repairs thereto, or new structures thereon, or when said works were not obstructed by ice, or by reason of some unavoidable breach in some structures of said works, or other casualty thereto, not caused or arising from the act or default of said Lessees, or on account of scarcity of water produced by drouth, have kept said canals in good and proper condition and repair for prompt, speedy and successful navigation by all boats not drawing more than three (3) feet of water.

They did at all times, except as in the question above qualified.

If there has been any delay or hinderance to the navigation of boats not drawing more than three (3) feet of water, during the navigating seasons since June 1, 1861, state what has caused such delay or hinderance.

Such delay has been occasioned by drouth, and want of water in the streams and reservoirs. Our instructions were very pointed and direct always, not to let any water be wasted.

State whether the hinderance or delay has ever been occasioned by any neglect or improper conduct of the Lessees.

None in the world, to my knowledge.

State whether the Lessees, during their term, have been as thorough and prompt in making needed repairs and new structures, as the State, when it had the management of the same.

I think the Lessees have been more prompt and thorough than the State ever was since I knew the canals. This seeming neglect on the part of the State arose from its lack of confidence in the canals to earn enough to pay their current expenses for repairs and maintenance of the same. The bad condition of the canals in 1861, was not the result of a single year, but of a succession of years. In 1855, they were let to be kept in repair by contract. The system met with opposition, and the Legislature passed an act rescinding the contracts, out of which controversy and litigation arose, and for some time there was not funds at the command of the Board of Public Works with which to make needed repairs. As a consequence not much work was done. From 1856 to the date of the lease, the revenues of the canals were not sufficient to meet the necessary repairs, and the Legislature was tardy in supplying funds, and as a consequence, from year to year there was a lack of the necessary work done to keep the structures in repair, and maintain the works. The Board of Public Works and their engineers, though zealous in the performance of their duties, were powerless to overcome this feeling on the part of the State.

State whether you have any interest in said lease; if so, state what it is.

I have no interest in the lease. I am on the bond of the Lessees to the State, as one of their sureties.

THOMAS MILLER.

COLUMBUS, March 30, 1872.

GEORGE W. MANYPENNY, of lawful age, being first duly sworn, deposes and says as follows:

QUESTIONS BY LESSEES.

State your age, place of residence and occupation.

I am in my 64th year; reside in Columbus, Ohio, and am the general agent of the Lessees of the Public Works, which position I have held since the date of the original lease, having the direction and oversight of all the superintendents, collectors and other officers and employes engaged on the Public Works, by said Lessees. The whole of the repairs and reconstructions on said Public Works, since the date of the lease, have been under my general direction.

How long and how intimately have you been acquainted with the Public Works of the State.

My first acquaintance was with the National Road. In 1833, I was appointed engineer on said road, and remained in that position for about three years. I was acquainted with the Muskingum Improvement during its construction, having been the contractor for section No. 1 (at Zanesville). My acquaintance with the Ohio, Hocking, Walhonding and Maimi and Erie canals commenced in 1850, when I was elected a member

of the Board of Public Works, which position I occupied for about three years, having special charge of Ohio, Hocking and Walhonding canals, and Muskingum Improvement, while a member of the Board. My acquaintance with the Western Reserve and Maumee Road commenced since the date of the lease.

State in what condition the Lessees have kept and maintained the Public Works of the State, as compared with their condition, at the time of the execution of the lease of the same.

I regard the Ohio, Hocking, Walhonding and Miami and Erie canals, and the Muskingum Improvement, as all having been kept and maintained in a better condition of repair by the Lessees, than said works were in when they took possession of them, or than they had been in for several years previous thereto. The dams, aqueducts, culverts, bridges, locks and others structures, wherever needing it, have had such repairs and reconstruction as to render them much better than at the date of the lease. The prism of the canals has been very much improved, and the capacity enlarged and the banks strengthened. The feeders have been cleaned out and improved so as to give them greater capacity. The usual spring repairs for this season have not yet been made, owing to the extreme severity of the winter, and the ice in some portion of the canals having not yet disappeared. There are some few locks and other structures that are not probably as good now as in 1861, but when the contemplated repairs are put upon them, they will be better. Two of the aqueducts on the Ohio canal—the one over Deer Creek, in Ross county, the other over the Big Cuyahoga, at Peninsula, have served their day, and the material for new superstructures for both, is prepared and will be put in this spring. The aqueduct over the Tuscarawas, above Bolivar, though safe, with some repairs for present navigation, will soon need to be rebuilt. Several of the locks in Akron and its vicinity, will need the partial lifting and resetting of the stone, a number of new gates will be required, as well as the floors and mitresills repaired, and a number of them that leak will require to be grouted. The timber cribs at the head and foot of some locks need, and will have repair. These remarks are applicable to a few locks in other localities, particularly at Lockburn on the Ohio canal, and at Lockland on the Miami and Erie canal, but I do not regard the condition of the structures last referred to as affecting my general statement as to the comparative condition of the Public Works now as a whole with 1861. There is a gradual deterioration in the lock walls, caused by the ordinary wear, and the bad quality of the material in some, and defective construction in others. Some fifty-five locks have been entirely rebuilt on the Ohio and Miami and Erie canals by the Lessees. Many others have been partially rebuilt by them, and every spring the floors and mitre sills have been renewed or repaired as the necessity required, and locks grouted. On all the canals combined I do not think there is more than five per cent of the lock gates in use June 1, 1861, now remaining, and almost all of the aqueducts have had their superstructures rebuilt since that time. The dams, with one or two exceptions on all the works, are in better condition than in 1861, and the exceptions are as good now as they were then.

State whether the Lessees at all times since the execution of said lease, when the season permitted and the water was not necessarily drawn out of the canals constituting part of the Public Works for repairs thereto, or new structures thereon, or when said Works were not obstructed by ice, or by reason of some unavoidable breach in some structure of said Works or other casualty thereto, not caused or arising from the act or

default of said Lessees, or on account of scarcity of water produced by drouth, have kept said canals in good and proper condition and repair for prompt, speedy and successful navigation of all boats not drawing more than three feet of water.

They have, and with the exceptions named in the last interrogatory, they have put and maintained the Ohio and Miami and Erie canals in good and proper condition and repair for prompt, speedy and successful navigation of all boats drawing from three feet two inches to three feet four inches when there was an ordinary stage of water. Many boats now navigate drawing three feet six inches of water.

State whether any hindrances or delays to navigation on said Public Works have ever been occasioned by any neglect or improper conduct of said Lessees.

I think not; I know of none. They have aimed to employ capable and efficient officers, and have exercised over them a vigilant supervision, and held them to a strict accountability.

State whether the Lessees, during their term, have been as thorough and prompt in making needed repairs and new structures as the State when it had the management of the same.

They have, in my judgment, been more thorough and prompt than the State was. Numerous reasons will suggest themselves to every business man for the correctness of this opinion. Private enterprise is more efficient in such matters, than those managed by the most faithful public officials.

State how the facilities offered by the Public Works under the Lessees, for the purposes of navigation, compare with the same when said Works were managed by the State.

They are better. Boats of a heavier tonnage and deeper bearing can navigate the canals successfully now than they could on or before 1861.

State the comparative facilities the Lessees have provided themselves with for making all needed repairs, with those provided by the State at the time the Public Works were leased.

By the terms of the lease the Lessees were required to take all the boats, scows, tools, implements, horses, mules and other property used by the State on said Public Works at an appraised value, to be made by appraisers provided for in the act authorizing the leasing of said Works. The appraised value of all the property aforesaid amounted to about (\$10,100) ten thousand one hundred dollars, for which sum they were turned over to the Lessees. Many of what are called repair boats, were at that time wholly unfit for use, and the quantity and quality of the tools and implements were entirely inadequate to do the necessary work required in the maintenance and repair of said Works. The boats, scows, tools, implements, mules and horses now in the possession of the Lessees and used in the maintenance and repairs of the Public Works, cost them more than eighty thousand dollars (\$80,000), and are now listed for taxation at nearly sixty thousand dollars (\$60,000). Among these implements are four (4) steam dredges, with a capacity to do the work per day of at least one hundred men each. These dredges are used in bottoming out the canals during the entire season of navigation, and also in the winter season, except when the ice is unusually heavy. In addition to bottoming out the canals, these dredges in many places are enabled to place the deposits upon the banks so as to raise and strengthen them. The facilities the Lessees have in this respect enable them to remove obstructions with a promptness that the State was never able to do. These dredges are

additional facilities over what the State had; but the Lessees have not dispensed with the repair boats and the complement of hands to each, which were in use by the State, but have added to the number of such boats since the date of the lease.

State the aggregate amount expended by the Lessees during the ten years of the lease ending June 1, 1871, for the purposes of construction, superintendence and repairs on the Public Works.

The aggregate amount expended for the purposes indicated in the above inquiry, is about three millions two hundred thousand dollars (\$3,200,000), which sum includes the amount paid the State for rent, which is \$200,750, and probably not to exceed \$20,000 more for attorney's fees, damages, purchases of land and other incidental expenses. During the five years of the lease prior to June 1, 1870, these expenditures amounted to about one million seven hundred and forty-four thousand dollars (\$1,744,000). The State expended in the five years ending the 15th day of November, 1861, for construction, superintendence and repairs, as appears by the published records, the sum of one million three hundred and twelve thousand five dollars and nineteen cents (\$1,312,005.19). After the 1st day of June, 1861, the State made no repairs, but the great body of the expenditure for that year were necessarily made before that time. With the facilities the Lessees had during the five years ending June 1, 1871, to do work, I think they were enabled to do, and did do, I believe, double the amount of work for the amount expended that the State could have done with the means she expended in the last five years prior to the lease.

To what extent have boats been limited to three feet draft by the Lessees.

The Lessees have for several years gauged boats navigating the Hocking canal to a draft of three feet. This was commenced before the Lancaster side-cut was dredged, and when it was very difficult for loaded boats to navigate it, in which condition it was left by the State. On two occasions for a brief time, because of insufficiency of water on the Portage Summit, resulting from extreme drouth, boats have been gauged to three feet. I have no recollection now of any other points where they have been restricted to three feet.

What is the character of the new structures made by the Lessees.

They have all been of a permanent and enduring character, in my opinion.

Have the Lessees permitted any exhaustion of the supply of water in any of the reservoirs for any other purpose than navigation at any time during their term.

In rainy seasons water has to be drawn from several of the reservoirs and wasted, in order to prevent the destruction of the banks. In seasons of drouth the water in the reservoirs is carefully husbanded; the drawing in the former and holding of the water in the latter cases, is confided to men employed especially for that purpose, who act under the most specific and stringent orders. I know of no instance in a season of drouth, or when the waters were needed for navigation, that any waste occurred. There was a rumor at Akron and in that region, that in the winter of 1870 and 1871, water was wasted from the Portage Summit reservoir. From the fact that there was but little or no rain during that winter to supply the reservoir with water, special attention was given to that matter by Col. Nugen and myself; and in the month of February, 1871, because of the lack of rain in December and January previous, precautionary measures were taken to obtain and husband all the water that was

available. During the entire navigating season of 1871, there was but two rains that put any water into the reservoir, and it was not full at the opening of navigation. Nevertheless, by the care and economy used by the Lessees in preserving and drawing water for navigation, it furnished a supply to do a larger business than ever was done before in any one season as I believe. It was discovered that the lessee of the water power at the State Mill was drawing water from the reservoir in February, 1871, at which time he was stopped, and the key to the gate-house regulating the flow of water to his mill was taken from him. The same diligence was used in relation to husbanding the water at the Licking Summit, and other reservoirs during that winter and spring; but none of the reservoirs were filled in the winter of 1870 and 1871, and the summer was unusually dry, and hence the supply was deficient. At the Licking Summit navigation failed in the month of June, the result of which was very disastrous on that portion of the Ohio canal supplied from it, as well as on the Hocking canal. In the spring of 1871, when the repairs were being made, and the water was out of the canal, the flash boards were taken up at the foot of Long lake, and the water was turned down the Tuscarawas river. This was necessary, and was the only escape the water of the Tuscarawas river could have for the time being. This precaution has always been taken under similar circumstances.

QUESTIONS BY COMMISSIONER J. B. GREGORY.

What relation do you sustain to the lease.

I am one of the Lessees, having purchased the interest of Wm. J. Jackson in the same.

State what causes operate to impede navigation on the Ohio canal in dry seasons, and in what way these could be remedied.

In dry seasons there is not the means provided for a proper supply of water to be laid up on the Portage and Licking Summit reservoirs; the capacity of these reservoirs is inadequate. The South Fork feeder to the Licking Summit ought to be enlarged to at least double its capacity, and an additional reservoir might be constructed in the valley of the Bloody run. How the supply could be increased on the Portage Summit is a question for investigation, but as to the necessity of an augmentation of the water supply, there can be no doubt. The increase of business demands it. The grass is also an impediment to navigation on portions of the Ohio canal every year, but much aggravated in very dry seasons. In wet seasons, when the waters in the streams supplying the feeders are more or less colored, the grass does not grow rapidly, but in dry, warm weather, when the water in the canals is clear, the growth is very rapid. Sometimes it is cut as often as five times in the season on some levels. On the other canals there is comparatively little inconvenience from grass. Dredging will not destroy the grass. At points where we have dredged thoroughly, the growth is as rank as before. Another impediment to navigation is the improper use of water by lessees of water power, and this is general, and ought to be put a stop to; but this cannot be done until such gauges are put in at the mills and other hydraulic works, as will effectually restrain the occupants from the use of any water other than what is really leased to them. The deposit in the Portage Summit level is also to some extent an impediment to navigation, but a dredge has been on that Summit for many months, and has done and is doing

a good work. The deep cut on the Licking Summit is also much filled up with deposits, and this is an obstruction. A dredge is also engaged in removing this deposit, and will remain at that work until it is done. In this connection, I beg to remark that, in my opinion, the laws in force for the protection of the canals and the regulation of navigation thereon, are wholly insufficient, and ought to be revised and made applicable to the existing state of things. The attention of the Legislature has been frequently called to this subject by the Board of Public Works.

What effect would the improvement of the outlet of the Ohio canal into the Ohio river at Portsmouth have.

An improvement that would make the outlet at all times so that boats could go out into the Ohio river and return again into the canal, would be very valuable to the commerce of the canal, and of vast benefit to those using it as a channel of commerce. As it now is, I suppose it safe to say that for one half the year each season of navigation, boats cannot get from the canal into the river, or from the river into the canal.

Have the Lessees at any time permanently raised any of the levels on the canals by artificial means above the original or standard height fixed by the State.

They have not; at least I have no knowledge of it if they have. All superintendents of repairs have always had positive instructions on that subject. In numerous instances parties using water power have applied to me as the general agent, to permit the water on levels to be raised by raising the tumblers at the locks and waste weirs in the canal banks, thus to increase their power, but it has not been permitted. If the water line in any the levels be higher now than originally, it was made so before the execution of the lease; but in this connection I would remark that the height of the water on the mitre-sills is not an unerring test, for there is not uniformity on this subject.

What is the condition of water in the reservoirs at this time.

In all the reservoirs the water at this time is lower than I ever knew it at a corresponding time in the year, and much lower than at this time last spring. The winter has been unusually dry, and hence but little water has found its way into the reservoirs. Unless there be copious rains in April and May, there will inevitably be a great lack of water for the coming season of navigation. I have within a few weeks personally visited the Portage and Licking Summit reservoirs, and there is a great deficiency of the necessary supply of water in them, and I have regular and reliable reports of the condition of the water in the reservoirs on the Miami and Erie canal. The same deficiency exists in them. All care has been taken to husband the waters in all these reservoirs.

QUESTIONS BY LESSEES.

State in what condition the canals are in after a year's navigation before the spring repairs are made, compared with the same after making such repairs.

At the end of a season's navigation the canals are always in a worse condition than at the opening. It cannot be otherwise. The best locks will, as they pass through the season, begin to leak more or less. In the walls under the mitre-sills and in the gates, leaks will develop themselves, and these, unless they become serious, requiring the suspension of navigation, cannot be repaired until navigation closes. The structures, prism and towing paths on the canals have been, during the whole of the

time since the commission appointed by the Governor set out to inspect them, in the condition they were at the close of navigation, augmented by the unusual severity of the winter, which has also prevented any repairs of moment being made even to this time, except the preparation of some timber work and the building of lock gates.

State the tonnage of boats navigating the northern division of the Ohio canal during the season of 1871.

The statement hereto attached, marked "Exhibit A," will show the tonnage of a boat indifferently selected for the days designated therein, between the 7th day of April and the 27th day of November, 1871, inclusive, as appears from the records of the Collector's office at Cleveland, also showing the place of loading and destination of such boats, and the weight of cargo in pounds.

State the aggregate amount of coal delivered in Cleveland by canal, from 1861 to 1871, inclusive.

The statement hereto attached, marked "Exhibit B," is a correct statement of the same as appears from the same records, given in bushels for each year, excepting for the year 1861, which only includes the time between the 1st of June and the 30th of November of that year.

What was the relative condition of the Western Reserve and Maumee road June 1st, 1861, and June 1st, 1871.

I did not see that road in 1861. My first visits over it was in 1862. I visited it in all the subsequent years and sometimes several times in the year. The road bed, the last of May, 1871, when I passed over it, I regarded as in better condition than I ever saw it. The small wooden bridges with one or two exceptions were also better. The covered bridges were in as good condition in 1871, as when I first saw them, except the roof on the bridge at Fremont, that was not so good; but all the wooden structures combined I think were in better condition in 1871, than in 1862. The side ditch at Muscalonge creek, had worn some more into the grade of the road in 1871 than in 1862. The toll houses I think were in an improved condition. The Board of Public Works, in February last, decided that the Lessees must put a new roof on the Fremont bridge, repair some small bridges, &c., and repair the ditch at Muscalonge; all of which will be done without delay.

GEO. W. MANYPENNY.

EXHIBIT "A."

Abstract of Weight of lading of Boats, weighed at Collector's Office, at Cleveland, Ohio, on the days respectively stated, with name of boat and place of taking the freight.

Date.	Boat.	Where from.	Pounds.
April 7	Hazel Dell.....	Fulton.....	126,300
11	A. Cant.....	Chippewa.....	149,000
12	J. Jacobs.....	Fulton.....	155,600
15	Amboy.....	Willow Bank.....	154,000
18	Levi.....	" "	145,100
20	O. Stafford.....	" "	154,200
24	J. Douds.....	" "	150,900
May 1	O. Stafford.....	" "	159,500
2	Amboy.....	" "	159,400
5	Fannie Hauks.....	" "	146,200
6	C. H. Clark.....	Chippewa.....	155,300
8	Signal.....	Willow Bank.....	151,800
9	Little Willie.....	Fulton.....	152,300
11	C. H. Clark.....	Chippewa.....	154,300
12	Sacramento.....	Fulton.....	146,300
13	Forest.....	".....	144,000
15	Wheeling.....	Willow Bank.....	147,100
16	Rosalia.....	New Castle.....	149,000
19	Amboy.....	".....	151,900
20	Adolphus.....	Willow Bank.....	148,000
22	O. Stafford.....	" "	155,100
23	Sego.....	Fulton.....	150,300
24	Palm.....	New Castle.....	144,100
26	Native.....	Willow Bank.....	143,900
27	Amboy.....	" "	152,100
29	J. N. Gray.....	" "	145,000
June 1	H. H. Little.....	Fulton.....	149,900
2	D. E. Hill.....	Willow Bank.....	154,600
3	Native.....	" "	150,700
5	Iowa.....	" "	150,700
6	Fashion.....	" "	154,800
12	Adolphus.....	" "	147,100
13	H. H. Little.....	Fulton.....	154,500
14	Union.....	".....	151,500
15	North Dell.....	New Castle.....	150,200
16	Fulton.....	Willow Bank.....	144,400
17	Jo Hooker.....	" "	145,900
19	Scout.....	" "	155,600
20	Wheeling.....	Fulton.....	155,400
21	A. W. Wynett.....	Willow Bank.....	146,000
22	J. Jacobs.....	Fulton.....	148,300
23	Veto.....	Willow Bank.....	150,200

EXHIBIT "A."—Continued.

Date.	Boat.	Where from.	Pounds.
June 24	Trent	Willow Bank	156,700
26	Fannie Hauks	" "	145,100
27	Com. Perry	" "	143,800
28	Signal	" "	149,800
29	O. Stafford	" "	145,900
30	Trent	" "	154,400
July 1	Adolphus	" "	150,000
3	Fannie Hauks	" "	148,800
4	Buckeye Boy	" "	145,800
5	A. Swan	" "	150,500
6	Jo Hooker	" "	144,600
7	H. H. Little	" "	148,300
10	Scout	" "	150,700
11	Faunie Hauks	" "	145,000
12	Trent	" "	146,900
13	G. H. Warrington	" "	143,500
14	H. H. Little	" "	152,600
15	Jo Hooker	" "	146,700
17	Energy	Fulton	152,400
18	Scandinavia	Massillon	145,700
19	Climax	"	154,600
20	Veto No. 2	Willow Bank	148,300
21	H. H. Little	Fulton	157,800
22	Paragon	Willow Bank	148,600
24	Iowa	" "	146,000
25	A. Brown	" "	142,800
31	E. H. Cole	" "	149,600
Aug. 1	Wheeling	Fulton	145,000
2	A. Swan	Willow Bank	150,600
3	L. Walzer	Fulton	141,800
4	Energy	"	151,700
6	Paragon	Willow Bank	149,900
7	Trent	" "	152,300
8	Odd Fellow	" "	142,800
9	O. Stafford	" "	148,200
10	C. H. Clark	Fulton	147,100
11	Ostrich	New Castle	140,900
12	Superb	"	143,500
14	Mystic	"	150,500
15	Veto	Massillon	140,700
16	J. L. Walton	New Castle	141,200
17	F. Black	Willow Bank	141,000
19	Sego	Fulton	142,900
21	Wheeling	Willow Bank	138,300
22	Orange	" "	133,900
24	Naiad	" "	134,300
25	Champion No. 2	" "	133,700
26	Myrtle	" "	141,800

EXHIBIT "A."—Continued.

Date.	Boat.	Where from.	Pounds.
Aug. 28	C. H. Clark	Fulton	135,600
29	Trent	Willow Bank	137,200
30	Little Mary	Fulton	132,100
31	Fannie Hauks	Willow Bank	140,200
Sept. 1	Levi	" "	147,100
2	Rosalia	" "	145,900
4	G. H. Warrington	" "	148,800
11	Myrtle	" "	156,000
12	Forest	" "	155,600
13	Resolute	" "	148,300
14	Mystic	Fulton	152,900
15	Naiad	Willow Bank	149,000
16	Adolphus	" "	150,300
18	Little Mary	Fulton	144,200
19	Jo Hooker	Massillon	146,000
20	Rainbow	Willow Bank	130,900
23	Wm. W. Reed	" "	143,600
25	Portage	" "	140,500
26	Amboy	" "	146,700
27	Samson	" "	142,100
28	O. Stafford	" "	137,900
29	Ruth	" "	139,100
30	Paragon	" "	131,300
Oct. 2	Odd Fellow	" "	134,600
3	Iowa	" "	137,800
4	P. Metcalf	" "	140,000
9	Chester	" "	135,100
10	Pearl	" "	132,100
11	Adolphus	" "	133,700
12	Clayton	" "	121,800
13	Naiad	" "	130,000
14	Mercer	" "	129,200
16	Veto	" "	132,300
17	Ocean	" "	126,300
18	Iron Valley	New Castle	107,700
19	Fred. Wood	Willow Bank	115,700
20	Onego	" "	107,600
21	A. Henderson	" "	99,700
22	Jo Hooker	" "	114,700
25	Ruth	" "	97,300
26	Wm. W. Reed	" "	94,500
27	Churchill	" "	92,700
28	D. Price	Fulton	96,500
30	Union	Willow Bank	93,700
31	Little Mary	" "	92,300
Nov. 1	Shamokin	" "	97,500
2	Iowa	" "	92,800
3	Fashion	" "	95,300

EXHIBIT "A."—Continued.

Date.	Boat.	Where from.	Pounds.
Nov. 4	Forest	Fulton.....	93,200
6	Ensign	Willow Bank	98,100
7	Myrtle.....	" "	100,100
8	Chester.....	" "	89,100
9	Ruth	" "	95,500
10	Veto	" "	98,100
11	Ocean	" "	97,100
13	Jo Stanley	" "	101,100
14	Summit.....	Fulton.....	92,700
15	Scandinavia.....	Willow Bank	99,000
16	Resolute	" "	94,000
17	E. H. Cole	" "	104,200
18	Superb	" "	100,000
20	Magill	" "	127,100
21	Sea Breeze.....	" "	132,000
22	Wm. W. Reed.....	" "	130,700
23	Gen. Sherman.....	" "	125,200
25	Champion No. 2	" "	133,100
27	Scout.....	" "	132,100

EXHIBIT "B."

Tonnage of Coal carried to Cleveland in the years ending Nov. 30, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870 and 1871, in Bushels.

1861*	Nov. 30.....	Coal, in bushels	1,685,376
1862	Nov. 30.....	do	2,882,488
1863	Nov. 30.....	do	3,862,207
1864	Nov. 30.....	do	4,236,148
1865	Nov. 30.....	do	3,826,229
1866	Nov. 30.....	do	4,427,608
1867	Nov. 30.....	do	4,694,337
1868	Nov. 30.....	do	4,886,744
1869	Nov. 30.....	do	5,752,263
1870	Nov. 30.....	do	2,929,167
1871	Nov. 30.....	do	6,618,786

* This year was from June 1 to Nov. 30, 1861.

I hereby certify, that the following named witnesses, whose depositions are hereto attached, to-wit: Josiah Parkhurst, James Smart, B. F. Jennings, William Elsey, M. A. Pritchard, E. A. Fitch, Wm. Monypenny, R. S. Wynn, A. W. Williamson, John C. Lewis, C. Overturff, James Day, A. E. Gage, W. G. Whitney, George Davis, James Emmitt, I. H. Allison, W. C. Stafford, Wash McLane, Martin Schneider, Samuel Lewis, James V. Kinney, Jeremiah Dildine, Lewis Boyer, Nicolas Rowe, Harlow White, Thomas St. Leger, Andrew Sayler, Frank Myers, Wm. Coffman, Samuel Boardman, J. W. James, Robt. Wright, Ira W. Gage, D. A. Miller, Porter Alexander, David Hand, Andrew McKinney, L. D. Poston, Ashford Poston, John Dreaney, James Freer, John Burberry, George Freer, Edward Ball, Edward H. Sprague, A. Webster, A. L. Curtiss, J. J. Barr, Wm. Davis, S. C. Beckwith, A. P. Stults, George Foskett, Isaac Minthorn, John H. Weakly, Joseph Rader, N. J. Kelly, J. W. Larimer, B. M. Pugh, Josephus Norris, John S. Smeck, Wm. J. Jackson, Thomas Miller, and George W. Manypenny, were by me first duly sworn to testify to the truth, the whole truth, and nothing but the truth, touching all questions put to them by me, relating to the Public Works of the State of Ohio, and that the said Edward Ball, Edward W. Sprague, A. Webster, Wm. J. Jackson, Thos. Miller, and Geo. W. Manypenny, were sworn at the request of the Lessees.

In witness whereof, I have hereunto set my signature officially, this first day of April, A. D. 1872.

JOHN B. GREGORY.

DIVISION NO. 3.

DAYTON, O., February 23, 1872.

JACOB PATTON, being duly sworn, testifies as follows :

Where do you reside, and what business do you follow.

I reside in Dayton, and run a canal boat on the Miami and Erie canal.

What is the greatest depth that you load your boats to.

Three feet is the usual depth, but sometimes they are loaded a little deeper, perhaps an inch deeper.

Can the heaviest loaded boats pass each other freely at all places, where boats should pass in the canal.

Such boats can pass without difficulty, when the water is at its usual height, except about one-half mile on Greenland level.

Was you running a boat on the canal in the year 1861.

Yes.

Was the canal in as good condition for boating in the year 1871, as it was in the year 1861.

Some parts of the canal were in as good condition in 1871, as in 1861, and some parts, perhaps one-half of it, were in better condition.

JACOB PATTON.

ROBERT CHAMBERS, being duly sworn, testifies as follows :

What business are you engaged in, and where do you reside.

I reside in Dayton, and am engaged in the forwarding and boating business on the Miami and Erie canal, and have been engaged in the same since the year 1832.

In what condition for boating is the canal at this time, and also during the last summer and fall.

I consider the canal in good boating order during this time, with the exception of a scarcity of water during the dry season.

Do you believe the canal to be in as good condition for boating at this time, as it was in the year 1861.

Yes.

How deep do you load your boats.

They are loaded so as to draw from two and a half to three feet of water, and not deeper than three feet that I know of.

Do you know of any difficulty in heavily loaded boats passing each other.

I have heard that there are difficulties of that kind.

ROBERT CHAMBERS.

JACOB HELM, being duly sworn, testifies as follows :

Where do you reside, and what business do you follow.

I reside in Dayton, and follow canal boating.

How long have you been engaged in boating on the Miami and Erie canal.

I have been constantly engaged in boating on said canal, fourteen or fifteen years immediately previous to this time.

In what condition for boating is the canal at this time.

I consider the canal is in reasonably good condition, for passing boats carrying not over sixty tons of freight.

How was the condition of the canal in the year 1871, as compared with its condition in the year 1861.

I believe there was no material difference in the condition of the canal at the above named dates.

How deep do you load your boat.

I generally load down three feet, and sometimes I load down to three feet two or three inches.

Can full loaded boats, pass each other without difficulty, at all places that boats should pass on the canal.

There are some places though, not very many places, where full loaded boats cannot pass each other without difficulty.

JACOB HELM.

SAMUEL HUNTER, being duly sworn, testifies as follows :

Where do you reside, and what is your employment.

I am engaged in boating on the Miami and Erie canal, and have been during the last fourteen or fifteen years, and reside in Dayton.

In what condition for boating is the canal at the present time.

I consider the canals in good condition for boating, from Cincinnati to the village of Texas, but from that place to Toledo, it is in bad condition, on account of the leakage of the locks.

To what depth do you load your boats.

I load down to three feet deep.

Can full loaded boats, pass each other in the canal without difficulty, at all places where they should pass.

There are many places in the canal where two loaded boats cannot pass each other, at the ordinary stage of water, without much difficulty, and some places that they cannot pass at all.

How was the condition of the canal for boating in the year 1871, as compared with its condition in the year 1861.

The canal from Cincinnati to the village of Texas, was in about as good condition in the year 1871, as it was in the year 1861, but that part between Texas and Toledo, was not in as good condition as it was in 1861.

SAMUEL HUNTER.

JOHN STANEKY, being duly sworn, testifies as follows :

Where do you reside, and what business do you follow.

I reside in St. Mary's, and follow boating on the Miami & Erie canal.

How long have you been engaged in boating on the canal.

Between seventeen and eighteen years.

In what condition for boating was the said canal in, during the year 1871.

I do not consider that it was in good condition.

In what respect was it bad.

There was not sufficient depth of water, and the canal was so narrow and shallow that two full loaded boats could not pass in some places, and passed with much difficulty in other places.

In what condition was the canal in the year 1871 as compared with the year 1861.

I believe it was in a little better condition in 1871 than it was in 1861.

How deep do you load your boats.

Generally to draw three feet of water, but sometimes to three feet two or three inches.

JOHN STANEKY.

PIQUA, February 24, 1872.

E. FARRINGTON, being duly sworn, testifies as follows :

Where do you reside, and what business are you engaged in.

I live in Piqua, and am engaged in boating and the forwarding business, and have been for the last twenty-three years.

In what condition is the Miami & Erie canal for boating at the present time.

I think the canal is in tolerably fair condition, but needs improvement at Providence, Slackwater and Toledo locks.

How was the condition of the canal for boating in the year 1871, as compared with its condition in 1861.

I consider the canal was in fully as good, if not better condition in the year 1871 than it was in the year 1861.

E. FARRINGTON.

JEREMIAH CROWLEY, being duly sworn, testifies as follows :

Where do you reside, and what is your occupation.

I reside in Piqua, and have been engaged in boating on the Miami & Erie canal, constantly, since the year 1863, and frequently before that time.

In what condition for boating is the canal at the present time.

Very good, I think.

How deep do you load your boats.

I load the boats down three feet generally; sometimes they are loaded down to three feet two or three inches, but not often.

Can two full loaded boats pass each other on the canal without difficulty, in all places where boats should pass, if the water is at its proper height.

Full loaded boats can pass each other at all proper places, except between Franklin and Hamilton, where there are a few places that full loaded boats cannot pass each other.

How was the condition of the canal for boating in the year 1871, as compared with its condition in the year 1860.

I think the canal was in better condition for boating in the year 1871 than it was in the year 1860, with the exception of scarcity of water, which could not be helped.

JEREMIAH CROWLEY.

ROBERT AINSWORTH, being duly sworn, testifies as follows:

Where do you reside, and what is your occupation.

I reside in Piqua, and have been engaged in running boats on the Miami & Erie canal for the last six years.

In what condition for boating is the canal at the present time.

I think the canal is in tolerably good order for boating, excepting trouble from irregularity in the stage of water, caused by the irregular and improper use of water by the mills.

To what depth do you load your boats.

The boats were generally loaded to three feet in depth; sometimes, though rarely, to three feet and one inch.

Can two full loaded boats pass each other in the canal without difficulty, in all places where boats should pass.

There are but few places between Sunfish lock, near Franklin, and Hamilton, about twenty miles, that two boats drawing three feet of water can pass each other. In other parts of the canal, there is but little trouble in passing boats.

ROBERT AINSWORTH.

J. S. BLOOD, being duly sworn, testifies as follows:

Where do you reside, and what is your occupation.

I reside in Piqua, and have been engaged most of the time for the past 26 years in boating on the Miami and Erie canal.

In what condition for boating is the Miami and Erie canal at the present time.

I consider the canal to be in reasonably good condition for boating.

How deep do you load your boats to.

Three feet deep is considered a full load; but sometimes, when there is plenty of water, I load down to three feet, three inches.

Can two full loaded boats pass each other at all proper places in the canal without difficulty, when the water in the canal is at its proper height.

There are some places in the canal that such boats cannot pass each other, and many others in which they pass with difficulty, and have for the last ten or twelve years been in that condition.

How was the condition of the canal in the year 1871 as compared with its condition in the year 1861.

I do not think there was any material difference.

Do you ever find any difficulty in boating from irregularity of water in the canal, and if so, what is the cause of the irregularity.

There is much difficulty from irregularity, which is caused by the improper use of water by the mills.

J. S. BLOOD.

JOHN CONWAY, being duly sworn, testifies as follows:

Where do you reside, and and what is your occupation.

I reside in Piqua, and am engaged in boating now, and have been for the last eighteen years.

In what condition for boating is the Miami and Erie canal at this time.

I consider the canal in tolerably good condition, but there was a scarcity of water during the last season, on account of the drouth.

How deep do you load your boats.

The boats are loaded to three feet generally; sometimes to three feet, two and three inches deep.

Can full loaded boats pass each other on the canal without difficulty, at all proper places, when the water is at the proper height in the canal.

I know of no places in the canal where full loaded boats cannot pass, when the water is as its proper height.

In what condition for boating was the canal in the year 1871, as compared with its condition in the year 1861.

I believe the canal was in fully as good, if not better condition in the year 1871 than it was in the year 1861.

JOHN CONWAY.

JOHN F. MCKEE, being duly sworn, testifies as follows:

Where do you reside, and what business do you follow.

I reside in Piqua, and have been engaged in running boats on the Miami and Erie canal from the year 1842 until the year 1871; since, I have not been boating.

In what condition for boating was the canal when you quit boating, in the year 1871.

I considered the canal at that time in reasonably good condition for boating.

How deep do you load your boat.

I usually loaded down to three feet deep; but have sometimes loaded the boat down to three feet, three inches.

Can full loaded boats pass each other at all places, where boats should pass on the canal, without difficulty, when the canal is full of water.

There are some places in the canal that full loaded boats cannot pass each other, and many other places where they pass with much difficulty.

Is there any difficulty experienced on account of irregularity of water in the canal.

Yes, a great deal.

What is the cause of the irregularity.

It is caused by the irregular use of water at the mills.

Was the canal, in the year 1871, in as good condition for boating as it was in the year 1861.

I believe the canal was in as good condition for boating in 1871 as it was in 1861.

JOHN F. MCKEE.

St. MARY'S, Feb. 27th, 1872.

WILLIAM BAINBROOK, being duly sworn, testifies as follows:

Where do you reside, and what business are you engaged in.

I reside at St. Mary's, and have owned and run boats on the Miami and Erie canal for the last twenty years.

In what condition for boating is the canal at this time.

I consider the canal as being in tolerably good condition for boating.

To what depth do you load your boats.

I generally load down to three feet in depth; sometimes, though very rarely, I have loaded down to three feet, two or three inches.

Can full loaded boats pass each other freely and without difficulty, at

all places in the canal where it is proper for boats to pass, when the water is at its proper height in the canal.

Between Troy and Cincinnati, a distance of about eighty-seven miles, there are many places in which boats loaded to three feet in depth cannot pass each other, and there are many other places where they cannot pass without much difficulty and delay. I believe that on one half of the above named distance, boats cannot either pass at all, or do pass with difficulty. From Troy to Toledo, loaded boats can pass each other in almost any place; and also from the Junction to the State line they can do the same.

In what condition was the canal for boating in the year 1871, as compared with its condition in the year 1861.

I consider all that portion of the canal north of Troy, as being in as good condition in the year 1871 as it was in the year 1861; but that portion south of Troy, is not in as good condition as it was then, on account of its diminished water section and want of width.

Have you any difficulty in boating from irregularity in the stages of water in the canals, and, if so, from what cause.

There is much difficulty experienced from irregularity of water, caused by the irregular and improper use of water by the mills.

WM. BAINBROOK.

THEODORE MAUSART, being duly sworn, testifies as follows:

Where do you reside, and what business do you follow.

I am and have been engaged, the last twenty-one years, in the grain business, milling and shipping on the Miami & Erie canal.

In what condition for boating is the canal at the present time.

The canal is in good navigable condition, excepting the Maumee slack-water, which has always caused much difficulty in the dry season on account of shallow water, causing much expense and loss of time in lighting over it.

In what condition for navigation was the canal in the year 1871 as compared with its condition in the year 1861.

The canal was in equally as good condition in 1871 as it was in the year 1861.

Do you know of any difficulty in navigation or milling, on account of irregular and improper use of water power.

I know of no difficulty in navigation on that account, but there is much difficulty in milling at this place, on account of the water not being properly gauged to the mills.

THEO. MAUSART.

BENJAMIN F. SULLIVAN, being duly sworn, testifies as follows:

Where do you reside, and what is your occupation.

I reside near St. Mary's, and follow boating. I have owned and run boats on the Miami & Erie canal for the last sixteen years.

In what condition for boating is the canal at this time.

I consider the canal to be in reasonably good condition for boating at this time.

How deep do you load your boats.

I generally load down to three feet two inches, and have loaded down to three feet four inches, and run from Toledo to St. Mary's.

Can full loaded boats pass each other at all proper places on the canal, when the water is at its proper height.

There are some places in the canal, between Troy and Cincinnati, in which full loaded boats cannot pass each other, and there are, probably, ten miles of that distance in which full loaded boats cannot pass each other without difficulty and delay. In that portion of the canal north of Troy, there are but few places in which full loaded boats cannot pass each other without difficulty.

Is there ever any difficulty caused by irregularity in the stages of water in the canal, and, if so, what is the cause of the irregularity.

There is some difficulty caused by irregularity of water, which is caused, principally, by the irregular and improper use of the water by the mills, and sometimes by the improper drawing of water by the boatmen.

In what condition for boating was the canal in the year 1871 as compared with its condition in 1861.

I believe the canal was generally in as good condition for navigation in the year 1871 as it was in the year 1861.

Has there been more or less delays in navigation, caused by managing or repairing the canal, since the year 1861 than there was prior to 1861.

There has been less delay.

F. SULLIVAN.

C. H. SULLIVAN, being duly sworn, testifies as follows :

Where do you reside, and what business do you follow.

I reside near St. Mary's, and am engaged in running boats on the Miami & Erie canal, and have been for more than twenty years ; sixteen of the last years I have owned the boats that I run.

In what condition for navigation is the canal at this time.

I consider the canal as in tolerably good condition for navigation.

How deep do you load your boats.

I load my boats down to three feet, and sometimes to three feet four inches, but generally to three feet.

Can full loaded boats pass each other at all proper places on the canal without difficulty, when the canal is full of water.

There are a few places in which full loaded boats cannot pass each other, and some others in which they pass with difficulty.

How was the condition of the canal in the year 1871, as compared with its condition in the year 1861, for navigation.

I think the canal was in better condition for navigation in the year 1871 than it was in the year 1861.

C. H. SULLIVAN.

JAMES H. ROWE, being duly sworn, testifies as follows :

Where do you reside, and what is your occupation.

I reside near St. Mary's, and follow boating on the Miami and Erie canal, and have owned and run boats for the last eleven years.

In what condition for boating is the canal at this time.

I consider it in very good condition.

How was the condition of the canal for boating in the year 1871, as compared with its condition in the year 1861.

The canal is in a good deal better condition for boating in the year 1871 than it was in the year 1861.

J. H. ROWE.

DELPHOS, March 7th, 1872.

THOMAS RISK, being duly sworn, testifies as follows:

Where do you reside, and what is your occupation.

I reside in Delphos, and have been engaged in boating on the Miami and Erie canal from the year 1856 till late in the summer of 1871.

In what condition for navigation was the canal in the year 1871.

I think the canal was in good condition for boating in the year 1871.

Is there ever any difficulty in boating from irregularity of water in the canal, and if so, from what cause.

There are difficulties sometimes, caused by boatmen drawing the water down too low on some of the levels.

In what condition for navigation was the canal in the year 1871, as compared with its condition in the year 1861.

I think the canal was in better condition in the year 1871 than it was in the year 1861.

THOMAS RISK.

DANIEL HELT, being duly sworn, testifies as follows:

Where do you reside, and what business do you follow.

I reside in Delphos, and keep the Commercial Hotel.

Have you ever been engaged in boating on the Miami and Erie canal, and if so, when and how long.

I have been part owner of a boat, and have been engaged in boating on the canal for the last twenty years, ending at the close of navigation in the year 1871.

In what condition for navigation was the canal in the year 1871.

I consider the canal as being in good condition for navigation, excepting the scarcity of water on the Providence slack-water in the dry season of the year, when boats had to be lighted over.

Is there ever any difficulty on account of irregularity of water in the canal.

No trouble worth speaking of.

In what condition for boating was the canal in the year 1871 as compared with its condition in the year 1861.

I believe the canal was in better condition for boating in the year 1871 than it was in the year 1861.

DANIEL HELT.

JOHN ROBY, being duly sworn, testifies as follows:

Where do you reside, and what business do you follow.

I reside in Delphos, and have been engaged in boating on the Miami and Erie canal during the last fifteen years.

In what condition for navigation was the canal at the close of navigation in the last year.

From this place north, the canal was in good condition, excepting the Providence slack-water, which required boats to be lighted over it during the dry season. The condition of the canal south of Delphos I cannot answer for, not having been over it for several years.

Have you any difficulty in boating from irregularity of water in the canal, and if so, from what cause.

Not much; and the cause for what we have I do not know.

In what condition for navigation was the canal in the year 1871, as compared with its condition in the year 1861.

I think it was in better condition, from this place north.

JOHN ROBY.

TOLEDO, March 14, 1872.

S. M. BREWSTER, being duly sworn, testifies as follows:

Where do you reside, and what business do you follow.

I reside in Toledo, and have been engaged in boating on the Miami and Erie canal for the last twenty-five years, a part of the time as a hand and part as owner of a boat.

In what condition for boating was the canal at the close of navigation in the year 1871.

I was not on the canal in the fall of 1871, but in the spring of that year the canal was in good condition.

How was the condition of the canal for navigation in the year 1871, as compared with its condition in the year 1861.

The canal was in a very much better condition in the year 1871, than it was in the year 1861. A loaded boat could make the trip from Toledo to Cincinnati and back in four days less time in the year 1871, than in the year 1861.

His

S. M. BREWSTER.
mark.

JOHN HELT, being duly sworn, testifies as follows:

Where do you reside, and what business do you follow.

I reside in Delphos, and have been engaged in boating on the Miami and Erie, and Wabash canals for the last twenty-three years, and am part owner of the boat that I run.

In what condition for navigation were these canals at the close of navigation in the year 1871.

The Wabash canal was in very good condition as far as the State Line, and the Miami and Erie canal was in good condition, excepting the Providence slackwater, where boats had to be lighted over during the dry season of the year.

Is there ever any difficulty caused by irregularity of the stages of water in the canal.

No; I never knew of any difficulty on that account.

In what condition for navigation were the canals in the year 1871, as compared with their condition in 1861.

The canals were in much better condition for navigation in every respect, in 1871, than they were in the year 1861.

JOHN HELT.